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Irradiation Therapy of Skin Cancers*

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The literature on the dosage and technique of irradiation therapy of skin cancers was indefinite and confusing several years ago. All the authors reported unusually good results, but their technique of irradiation and their dosage often varied considerably from one another. The technique employed by each author was the result of his personal experience with that particular method and his available facilities for irradiation therapy. The dosage he administered was determined more or less empirically, by trial and error.

To control the increasing mortality from skin cancer, it became evident to many therapists that a more precise dosage and a more standardized technique of x-ray irradiation of skin cancers was advisable and necessary. All of you are acquainted with the marked changes that have occurred in irradiation therapy in the last few years, particularly in regard to dosage. We have gone through the transition from homeopathic dosage to the true cancerocidal dosage.

We are indebted to Dr. Quimby and the Memorial Hospital group for the impetus they gave us in determining the proper dosage required to destroy a cancerous lesion. Their numerous experiments showed that 10 S.E.D. (skin erythemia units) were required to destroy a squamous cell carcinoma. The quality of the x-ray or radium irradiation was shown to be of little importance as long as a lethal dose could be safely administered to the base of the carcinoma. The S.E.D. or lethal dose measured in r (roentgen) units, was shown to vary with the type of irradiation used and the size of the irradiated field.

Doctors J. Martin, Grier,Widmann, Mac Comb and others have done much to establish a more uniform working basis in x-ray irradiation therapy of the small skin cancers. These doctors popularized the use of the massive dosage, 3000 r to 6000 r, given in one to four treatments, using low or medium voltage, with little or no filtration. Their methods are simple, economical, and easily adopted by every dermatologist and radiologist in the large city or small town.

In the irradiation treatment of the superficial small size skin cancers, I have been guided by the technique advocated by Dr. Widmann.[1] I consider a lesion up to 2.5 cm. as small. When such lesions are less than .5 cm. above the normal skin, I administer 1000 r to 1500 r on alternate days for a total of 3000 r to 4500 r to the lesion, plus .5 to 1.0 cm. of the adjacent skin. When the lesion is more than .5 cm. above the skin, I administer a total of 4000 to 5500 r to the lesion and surrounding skin. The factors used are: 100 K.V., no filter or 1 Aluminum filter for the former type of lesion; 120 K.V., 1 to 2 Aluminum filter for the latter type lesion. The distance used is usually 25 cm. When a patient who lives many miles from the office presents himself with a small cancer, I usually use the massive single dosage

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(as much as 6000 r), as advocated by Dr. Mac Comb.[2]

Dr. Widmann and other therapists feel that a technique similar to the one described above can be applied to all sizes and cellular types of skin cancers. I feel that this rapid dosage technique should not be recommended for the treatment of indurated skin cancers measuring more than 2.5 to 3.0 cm. in diameter. The administration of a lethal dose of x-ray irradiation to a large skin cancer within a few days causes a severe local reaction; it often causes the normal irridiated skin surrounding the cancer to be severely damaged, so that healing is slow and painful.

This is especially true when this type of irradiation is applied to a large cancer located on the ear, nose, or on the lip. The possibility of recurrences or local dissemination of the irradiated skin cancer is much greater when one uses the rapid dosage technique than when one uses the fractional dosage technique. The fractional dosage technique permits the therapist to include a wider area of normal skin surrounding the cancer in his irradiated field, and it permits him to administed the maximum dosage to the cancer with safety.

I therefore believe that fractional dosage is important in the treatment of all large indurated skin cancers, and that the use of high voltage is the preferable technique. My factors are: 180 K.V. to 200 K.V., .5 mm. copper plus 1 Aluminum filter, 25 ma., 40 to 50 cm. distance. Prior to 1939, I considered 4000 r to be the maximum dosage for a field 4 to 5 cm. in diameter. After I heard Doctors Murphy and Hufford's paper on the treatment of advanced skin cancers at the Radiological meeting in Atlanta in 1939, I have applied 6000 r to several advanced skin cancers without trepidation, and the cures and cosmetic results in this small series of cases are most gratifying.

My technique in administering high voltage irradiation to advanced skin cancer varies somewhat with the size and location of the lesion, and the convenience of the patient. I usually administer 200 r to 300 r (measured in air) to the cancer and a wide area of adjacent normal tissue four times a week. When approximately 3500 r has been given, I cut my field of irradiation down to the size of the cancer proper. 200 r is applied daily for an additional total of 2000 r to 3000 r. This technique is similar to that which Doctors Murphy and Huffers used in their series.[3]

When a patient in poor economic circumstances, living many miles away, presents himself with an advanced skin cancer, I attempt to deliver the total dosage of 4500 r to 6000 r within a period of three weeks, instead of five or six weeks. I administer about 300 r to the cancer and the large surrounding skin area, and on the same day, deliver another 300 r to the walled off cancer lesion. Treatments are given on alternate days (except Sunday). When 3000 r has been delivered to the normal surrounding skin, the rest of the required irradiation is delivered only to the palpable skin cancer. The cosmetic results from the use of this latter technique differs but little from the technique of the longer period of fractional dosage.

Whether the total dose to be delivered to the large skin cancer is 3500 r or 6000 r depends, in many instances, on the response of the tumor to irradiation. The longer fractional period gives one a better opportunity to observe the regression of the tumor and the irradiation effects, and enables the therapist to decide whether the maximum dosage should be pushed.

I agree with Dr. Widmann and others who state that a standard technique for x-ray irradiation of skin cancers is desirable and possible, particularly in the large cancer clinics. I believe that the x-ray treatment of small skin cancers can be standardized. And I believe that today we have the basis for standardizing the x-ray of the larger skin cancers. But I feel that the application of the science of irradiation to advanced skin cancers is still an art. The therapy of advanced skin cancer should continue to be individualized if we hope to continue to raise our percentage of cures and to improve our cosmetic results.

The recent literature on the treatment of skin cancer is rich with numerous examples of irradiated skin cancers that were changed from an apparent failure to a cure by supplementing deep x-ray irradiation with interstitial or contact radium therapy, or with massive low voltage irradiation, or by combining the irradiation methods with surgery.[4-5] All of you can quote similar personal experiences. Most of the lantern slides that I will show will tend to emphasize the importance of individualizing the irradiation therapy of the larger skin cancers.

I'd like to stress that the phrase "individualization of therapy" likewise should be extended to include the convenience of application of the therapy to the particular patient. Most patients with advanced skin cancer must travel long distances to the cancer clinic or to the private therapist. Most of them are in very poor economic circumstances and are often unable to pay for their board while staying in the city during the three to six weeks required for their x-ray therapy. In treating such patients, the shortest and still effective course of therapy

should be administered, even though the reaction is more severe. Radium therapy should be given at the same time as the external irradiation, when possible, instead of prolonging the total treatment over a period of several weeks. And if the lesion can be cured by the application of radium in one or two days, this type of therapy should be used instead of the longer course of x-ray irradiation.

A discussion of the various techniques of radium irradiation in the treatment of skin cancer would carry me too far afield. I usually apply radium to skin cancer by the contact method rather than by the interstitial method. I usually use the higher filtration, 0.5 to 1.0 mm. platinum filter, and distance of 3 mm. to 10 mm. When the radium is applied in contact with the indurated skin cancer at a distance of 7 mm. to 10 mm., the lethal dose is usually 700 mg/hr. for a lesion one square cm., about 1200 mg/hr. for a lesion two square cm., etc. I use radium therapy instead of x-ray irradiation in treatment of skin cancers—

1—When the indurated elevated lesion is less than 3.0 cm. in diameter.
2—To supplement or complement the deep or medium voltage x-ray irradiation.
3—When the lesion is so situated that external irradiation is applied only with difficulty.
4—When it is more convenient for me and my patient to use radium irradiation rather than the long course of x-ray irradiation.

CONCLUSION

In the last decade, we have witnessed the transition in technique and dosage in the x-ray irradiation of skin cancers. The empirical dosage has been replaced by a true lethal dosage, determined experimentally, and proved clinically.

The treatment of the small skin cancers, by x-ray irradiation can be standardized. We are indebted to Doctors Widmann and Mac Comb and others for their work along this line. Their technique can be easily and economically adopted by the dermatologist and radiologist in the smaller town.

The x-ray irradiation therapy of the advanced skin cancer is best treated with the high voltage technique, fractional dosage. A fairly good guide for the proper dosage and technique in the treatment of advanced skin cancer, as suggested in this paper, can be adopted in the majority of cases by most physicians. But, if we are to continue to increase our percentage of cures in advanced skin cancer, we must continue to individualize our therapy. Individualization should include not only combination of methods, when needed, as surgery, interstitial or contact radium, high and low voltage x-ray. It should also be applied to the convenience of the patient. This latter aspect of irradiation therapy of skin cancer can best be carried out by the therapist in private or group practice.

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Our Method of Care of Fractured Knee Cartilages*

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The time allowed necessitates the limitation of this paper to the consideration of fractured cartilages with varied damage to the adjacent lateral ligament: from no damage, up to that amount of damage which would make the procedure of choice include some reparative work on the offending ligament. All cases of other pathological processes, such as cruciate ligament damage, loose bodies other than cartilagenous fragments, synovial membrane pathology, and calcification of lateral ligament (Pellegrini-Stieda) have been omitted. A study of 30 cases is presented in which the same procedure and care were followed.

It is felt that no matter how important

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the actual procedure is considered, the extreme and consistant care to the details of the pre- and post-operative care are of equal importance. The neglect of any factor will quickly and adversely affect the patient's well being and comfort. The patients deserve this attention and will send their friends where they are assured of good care and a minimum of pain.

We like a full 24 hours of skin preparation in which the extremity is widely shaved and tincture of merthiolate is applied followed by a sterile stockinet.

As to the anesthetics—we do not use spinal on either compensation patients or patients who for some reason do not desire it. We do not hesitate to use Avertin as a basal anesthesia and we find that many patients prefer it. Local anesthesia can be very successfully used and is necessary in the poor and questionable risks. A tourniquet is used on those cases to be operated on under general anesthesia.

The leg is painted with tincture of merthiolate, the foot and lower leg are draped in a sterile pillow case which is wrapped firmly against the foot with wide bandage. This lessening of bulk helps, as you will later see. The knee is allowed to bend so that the lower leg hangs over the end of the table. The table is raised so that the patient's foot can be placed in the operator's lap as the operator sits on a stool.

The line of incision is always drawn on the skin to prevent even slight misplacement of the incision. Ten per cent silver nitrate can be used the day before surgery, and the small black mark which results will not come off during the actual operative preparation; or green ink may be used at operation. A dot is made on the most medial point of the patella, and another made over the anterior border of the internal lateral ligament at the level of the upper surface of the tibia. This point is easily found by rotating the tibia with your legs and palpating the thickened course of the ligament as it rolls under the fingers. Now a crescent shaped line is drawn that starts just below the patella mark, downward, curving medially to become horizonal just above the tibial plateau to extend to, *never beyond*, the limiting line at the lateral ligament. The incision is carried to the joint capsule and the flap is sutured back with any heavy suture. This relieves the flesh from the sharp retractor points and leaves the assistant's hands free. The freedom from trauma is a very important point. The capsule is now entered with the same type of incision, but the entrance is made in the center and enlarged as needed either way, as far as desired, and with the advantage of direct vision.

To help enter the joint space and absolutely to prevent injury to the structures within the joint, two methods are of value. Novocaine solution or sterile saline may be injected with a needle and syringe into the joint space, and the space may be extended so that the flow of fluid notifies the operator and allows him to grasp the inner border with a thumb forcep and open the hole to extend the incision under direct vision. The excess fluid can be quickly aspirated with a suction. The other helpful method is to grasp the lining layer with two thumb forceps or allis forceps and lift exactly in the manner used by surgeons entering the peritoneal cavity. The lift pulls the structure away from the inner joint structures. A little carelessness on entering the joint may result in a poorly placed deep incision or some scratching of some structure such as a femoral condyle. This may not ruin a knee but will serve to give the patient a little more post-operative pain and swelling, which we always hope to avoid.

A head lamp facilitates the examination of the inside of the joint for other pathology, as well as making more sure the removal of the cartilage. If loose bodies are at all suspected, novocaine solution of saline can be used to flush them out and the excess can be removed by suction.

The cartilage is removed one-half at a time. *This is important.* The cartilage is cut downward and in half at somewhere near the middle of the incision, or through a fracture line, if it is conveniently placed. A heavy clamp is used to grasp the half to be removed, and an ordinary handle with a number 11 blade is used for the removal. We have tried all sorts of special knives and implements for this removal, but always return to the number 11 blade. The first half is removed and the bed inspected for remaining tags. This is helpful by rotating the patient's foot inward, bringing the anterior end of the cartilage into the field of vision. After this has been satisfactorily completed and inspected, the foot is rotated outward to bring the remaining half into view. This is then removed. We have even tried a tonsil snare for this posterior extension, as advocated by Dr. Girard of Dallas, but we feel that the number 11 blade still is the instrument of choice. After this is done and the bed inspected, we are ready for closure. The closure is done with the knee remaining bent to prevent accidental shortening of the joint capsule.

Stainless steel suture is our choice for capsule closure, but this is not used in compensation cases, as they occasionally claim trouble after the sutures are seen in x-rays.

Private patients never make this complaint. Fine silk or cotton is a splendid suture to be used throughout the entire procedure. The choice of material is very secondary to the main factor of careful and kindly approximation without tension. The kindness to the tissue during closure is important.

The average operating time for these cases has been 40 minutes. They can be done this fast without haste, which may be foolish and dangerous.

After completion of the procedure another very important factor presents itself: the dressing. We prefer, and always use, a very loose and bulky bandage of heavy gauze rolls and use no adhesive tape, which is frequently the cause of tightness. Tightness equals pain —needless pain. The patient is placed in bed with the knee slightly flexed over a very small pillow.

It is very important that the dressing be removed after 24 hours, and if there is any doubt about an increase of joint fluid, the fluid is aspirated under local anesthesia. This is important and does more to afford comfort than any medicine. The aspirating needle is inserted on the lateral side of the leg above the patella at the peak of the swelling. Half our cass are aspirated the first post-operative day and 20 per cent do not even call for pain medicine.

All these knees are dressed the second post-operative day: Fifteen per cent are aspirated and two-thirds do not ask for pain medicine. It is unusual to aspirate on the third post-operative day, but we do not hesitate to aspirate and dress loosely as long as the swelling persists.

The average time spent in the hospital has been 11 days. We do not hurry patients out, as the compensation cases are more completely controlled in a hospital.

Patients are allowed up on crutches at the time they leave the hospital, and they use them until a few days after they want to bear weight. Our average time on crutches has been three and a half weeks. Two of this series refused to bear weight until the crutches were taken away. This has its effect on the statistics. These two men also refused to return to work despite good knees.

Our average time loss from surgery to resumption of work has been seven weeks. The two men who did not return are excluded from this figure, as their time loss is not known.

I have not given you gentlemen a standard type paper which starts and stops with the operative procedure, or covers the field of etiology, pathology and symptoms, which have been thoroughly covered by countless excellent observes, but have tried to bring you some important and consistently neglected points that are usually taken for granted or ignored altogether. The satisfaction of the patient, and his response by sending you a similar case or two, will make it worth your while to watch the little points.

I have presented a method of care, which, if followed, will allow any average man to do these cases in 45 minutes or less, and have a very happy patient who will have a normal knee in two months or less, with which he can do any work up to, and including, football, basketball, or heavy labor.

Further Experience with Pervaginal X-Radiation in the Management of Carcinoma of the Cervix*

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In a recent article published in the Wisconsin State Medical Journal, Dr. A. W. Erskine of Cedar Rapids, Iowa, made the statement that in his opinion pervaginal x-ray therapy of cancer of the uterine cervix is superior to radium.

Dr. E. A. Merritt of Washington, D. C. states that with pervaginal x-ray therapy, one may expect to cure cancer of the cervix in stages I and II and get about twenty-five per cent cures in stage III, and that he has practically put his radium on the shelf.

These statements by men of such high standing in their profession must not be re-

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garded lightly, because they have had a large experience with both radium and pervaginal x-ray. There are undoubtedly many other men doing this type of work but with the limited amount of literature at my disposal I have unfortunately not read about them.

My experience with pervaginal x-ray is still too much in its infancy to warrant a statistical survey. However, since January 1938, I have treated fourteen cases of cancer of the cervix or at least cancers which originated in the cervix. Two of these were treated with radium, one of which died and the other is living. There remain twelve cases treated by x-ray alone. At the present writing five are dead and seven living. All the dead were stage IV cancers.

The stages of the living cases are as follows: stage I, two cases; stage II, two cases; stage III, one case; stage IV, two cases. Irrespective of stages, grades of the growth, or the length of survival following treatment, the mortality rate runs about forty-one per cent.

Irrespective of the length of survival, in stage I the mortality to date is zero with one grade I and one grade III. In stage II the mortality is zero, with two grade IV cases. In stage III the mortality is zero, with one grade III. Two stage IV cases are still living, making the mortality for stage IV seventy-one per cent. Here the grading is probably more difficult because of secondary infections, but five cases with biopsis were as follows: Epidermoid grade III, one case; squamous cell grade IV, one case; squamous cell grade III, one case; squamous cell grade II, one case.

The statements made by Dr. Merritt and Dr. Erskine as well as my own experience spur me on to further effort.

From my own work I have drawn certain conclusions which, of course, may change as the years go by. At present they are as follows: If the growth is limited to the cervix and the cervical canal is open and easily accessible, either x-ray or radium will cure the case. By radium I mean platinum filtered capsules or needles. If the cervical canal is not visible, accessible, and patulous, and the growth is not limited to the cervix, slow interstitial platinum needles might be effective, but I believe pervaginal x-ray is less dangerous and possibly more effective. I feel the same about those cases in which the cervix is destroyed and the cervical canal is not available for a radium tandem.

In other words, in the stage II and III cases it seems to me that more cases will be saved by intravaginal x-ray than by radium, with the possible exception of interstitial slow needles in the hands of an expert surgeon-radiologist. By surgeon-radiologist I mean a man with enough experience in pelvic anatomy and spacial distribution of interstitial radium to enable him to place ten or twelve long radium needles in an effective pattern without puncturing one of the hollow viscera.

Men fulfilling this requirement are notoriously scarce and I do not believe that a radium colpostat without a cervico-uterine tandem will give sufficient depth does in the parametric to be cancerocidal, i.e. the spacial arrangement of radium as used by the general surgeon is not applicable in these advanced cases because the cervix is gone and the cervico-uterine canal is not available for tandem. Therefore the intravaginal x-radiation in the hands of a qualified radiologist is more efficient.

If the growth has destroyed the cervix, the uterine canal is inaccessible and by palpation the induration caused by the neoplasm is, e.g. in the anterior, left lateral and posterior fornix, three intravaginal applications of the Ferguson speculum should be used. Let us arbitrarily call the application to the anterior fornix, number I; the application to the left lateral fornix, number II, and the application to the posterior fornix, number III. In treating number I, the central ray of the deep therapy installation is directed toward the umbilicus by using the fourchette or perineal body as a fulcrum for the Ferguson speculum, and 300 r as measured in air is delivered. The next day, use the right vaginal introitus as a fulcrum and deliver 300 r as measured in air into the left lateral fornix. The next day, using the symphysis pubis as a fulcrum, deliver 300 r as measured in air to the posterior fornix. In each of the positions the longest lip of the Ferguson speculum is placed in such a manner that the region of the formed location of the destroyed cervix is included in the field. These treatments are continued daily in rotation in the order named in a clockwise direction until a total of at least 5000 r as measured in air have been delivered. I personally believe that in this manner 6000 r as measured in air could safely be delivered because the periphery of each field would receive much less than 6000 r and the central point representing the former presence of the cervix is small enough to recuperate following the application of the full 6000 r in air. However, to this date I have not exceeded 5100 r. All of these treatments require 200 kilovolts and 0.5 millimeter of copper and the distance on my equipment is about 42.5 centimeters. I failed to mention that the external series is given first.

Other analogous applications through the speculum are immediately perceived. For instance, if the cervix is destroyed, the cervical canal unavailable and the induration of the growth completely surrounds the site of the former location of cervix and its canal, four intravaginal applications of the copper filtered ray through the Ferguson speculum are used in the clockwise rotation as described. And the treatments continued until at least 5000 r as measured in air have been delivered. The homogeneity of the irradiation in such cases seems to me to be superior to that of radium.

In all sincerity I must admit that the more one uses his own tools in his own office the more confidence he develops and the better his results.

Neuroblastoma With Special Reference to Its Roentgen Manifestations*

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The sympathetic nervous system may give rise to several tumors, whose benign or malignant character varies, depending on their embryonal development. Ewing divides these tumors into three types: (1) neurocytoma or neuroblastoma; (2) neuroma or ganglioma, and (3) chromaffin cell tumor or paraganglioma.

All these tumors are of the same embryologic origin as the medulla of the suprarenal gland and the adjacent sympathetic ganglia. The medulla of the suprarenal gland arises from the ectoderm of the primitive neural crest, from which two types of cells originate: (1) the stationary cells, which develop into the dorsal root ganglion cells, and (2) the migratory cells, from which the sympathetic ganglion cytons and the chromaffin cells of the adrenal medulla are derived. The undifferentiated migratory cells are sympathetic neuroblasts. They form the chief element of the highly malignant neurocytomas or neuroblastomas. The benign tumors are composed of more differentiated cells. The mature nerve cells and fibers are found in gangliomas, and the chromaffin cells in paragangliomas. Virchow suggested in 1864, that the nervous tissue was the substrate from which these tumors developed. It was Marchand, however, who in 1891 pointed out a resemblance between the structure of such tumors, and that of the developing sympathetic system. His studies indicated that the "suprarenal sarcomas" were derived from neuroblasts.

Neuroblastomas may arise either in the adrenal medulla or in the immediate neighborhood. They develop most frequently in children under three years of age, and only rarely are they encountered beyond the age of 15 years. There have been several instances, where the disease was found in still-born infants. There are two clinical types of neuroblastoma, based on differences in distribution of metastases. In a small percentage of cases both types may be present simultaneously. The first syndrome caused by neuroblastomas was described by Pepper in 1901. It occurs in still-born and young infants. The tumor invades the liver and the regional lymphnodes, then the lungs, and late in the course of the disease the bones of the skull and other flat bones. The second type was described by Hutchinson in 1907, who after studying ten cases of so called "sarcoma of the suprarenal gland" in children, associated with metastases to the skull, defined the clinical syndrome as follows:

> "In the majority of cases the first thing noticed was some swelling about the bones of the skull, which in several of them was ascribed to a fall or injury. Following or preceding this, proptosis of one or both eyes was observed. In two-thirds of the cases discoloration of the eyelid on one or both sides was reported, and in a few instances this was the first point to attract attention. Anemia is a striking feature in all the cases, the blood changes being those of a profound secondary ane-

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mia. Leukocytosis has not been recorded in any case. An abdominal tumor in one or the other loin was felt in only five cases. The progress of the disease in every instance has been rapid, and the younger the patient, the more rapid it appeared. Indications of increased intracranial pressure, such as torpor, intense optic neuritis and blindness may develop. The post mortem features are also very constant; in all these was found a sarcoma of the suprarenal, usually consisting of small round cells, situated on the left side in six, and on the right side in four of these cases. The most extensive metastases were found in the bones of the vault and base of the skull, producing swelling on the head and protrusion of the eyes observed during life. Metastases are also met with in the ribs, sternum, and vertebrae, but not apparently in the long bones, though these may not always have been carefully examined."

PATHOLOGY

Neuroblastomas arise usually in one of the suprarenal glands, although in several instances both suprarenals were invaded by the neoplastic tissue. In the series of cases reported by Lewis and Geschickter, three showed bilateral involvement. These authors found it difficult to determine in such cases, whether the tumor was bilateral from the onset of the disease, or whether metastases developed in the gland not at first involved. Occasionally the neuroblastomas may be associated with more mature tumors of the sympathetic nervous system, i.e., with gangliomas and paragangliomas as e.g. in the case reported by H. R. Wahl and P. E. Craig. The tumor may be solid or cystic; it is usually well encapsulated. The surface is nodular and the color varies from a light yellow or gray to a dark hemorrhagic hue. The histological structure of neuroblastomas has been well described by Wright, who states:

> "The tumor is very cellular, resembling primitive migrating cells of the sympathetic nervous system, somewhat larger than a lymphocyte with a densely chromatic nucleus, and a narrow rim of cytoplasm. The matrix, in which the cells rest contains delicate fibrillae which do not take stain of connective tissue, collagen or neuroglia. They are probably primitive axis cylinders. The cells often assume a roughly circular formation about a bundle of fibrillae. These characteristic tumor "rosettes" are found in the primary tumor, but not usually in the metastases."

Lewis and Geschickter noticed the absence of "rosettes" in approximately one-third of the cases, which they have studied. This rather high percentage, in which the "rosettes" cannot be demonstrated, accounts for the inaccuracy of the histological diagnosis made from biopses, especially when the examined tissue was obtained from a metastatic lesion.

ROENTGEN FINDINGS

The roentgenologic interest presented by neuroblastomas is due chiefly to the extensive skeletal metastases to the long and flat bones. On many occasions the disease became manifest clinically, only after bone metastases have developed. The metastatic lesion presents destructive and proliferative bone alterations. The osteoclastic foci vary in size from small rarefaction within the spongiosa or cortex, to large destructive areas,, with pathological fractures. The multiple areas of rarefaction may become confluent, and loose their sharply defined contours. The bones then present a motheaten appearance. Associated with these destructive lesions are periosteal changes, described variously as "perpendicular striations," "spicules" and "whiskers." Roentgenologically these periosteal reactions resemble those encountered in Ewing's tumors, or osteogenic sarcomas. The periosteum is elevated, producing a fusiform thickening of the shaft. Frequently a complete interruption of the periosteum may be found, with subsequent spur formation, at both ends of the defective periosteum. Perpendicular arrangement of the newly formed bone spiculæ is found very often, and we observed it in some of the involved long bones in all our cases. These spiculæ are also present on the outer table of the cranial vault in some cases. Rypins explained the formation of bone spiculae as the result of a slow lifting of the periosteum due to infiltration by the tumor tissue which might have extended through the cortex from the lymphatics. He also quoted another explanation given by Greig, who suggested that an invasion of the bone from without, a decalcification by halisteresis or by the removal of the calcium as granules, the setting free of bone cells in a vascularity insuring a supra abundance of pablum, where bone changes have already a local excess of calcium, may be responsible for the perpendicular bone spiculæ. In presence of intracranial metastases with increased intracranial pressure, a wide separation of the sutures occurs very frequently.

Although the clinical syndrome and the roentgen manifestations of neuroblastoma are quite typical, the correct diagnosis intra vitam may occasionally be difficult. It may then become necessary to differentiate this clinical entity from other diseases presenting a similar symptomatology. Among those, congenital multiple bone syphilis, leukemia,

Figure 1. Metastatic lesions within the frontal bone; marked distention of the cranial sutures.

lymphosarcoma, chloroma, erythroblastosis and Ewing's tumor should be mentioned.

The insidious onset and frequently the first subjective symptoms and clinical findings referable to bone involvement, are not unlike those met with in congenital syphilis of the bone. The danger of a diagnostic error is especially great, when multiple bone lesions are observed. In one case of multiple bone syphilis which we had recently an opportunity to study, the bone changes resembled those found in neuroblastoma very closely. The lesions within the long bones were of destructive and proliferative character, the periosteum was elevated, in some areas interrupted, and several pathological fractures occurred in the course of the disease. Flat bones showed also a moth eaten appearance. The suggestion of neuroblastoma was even stronger because of mediastinal enlargement not inconsistent with mediastinal metastases. The positive Wassermann reaction and subsequent clinical course should however facilitate the differential diagnosis.

The differentation of leukemia and lymphosarcoma, in which one may find a similar periosteal apposition along the shafts of the long bones, and small rarefactions within the spongiosa, is relatively easy; the blood picture is usually characteristic.

The similarity between Hutchison's type of neuroblastoma and the cranial chloroma may be very striking. Both occur in childhood; the subperiosteal swelling of the cranial bones is identical. When the intraorbital periosteum becomes involved, one finds a protrusion of the eye, swelling and discoloration of the eyelids and ectropion, greatly resembling neuroblastomas. Later in the course of the disease, metastases to other bones may develop. Chloroma is, however, pratically always associated with leukemic blood pictures, whereas neuroblastomas are not accompanied by alteration of the white cells.

Greenthal and Epstein reported recently a case of neuroblastoma with a typical clinical picture, in which the biopsy specimens from the sternum and skull suggest a neoplasm involving the bone marrow with marked stimulation of hematopoesis and particularly erythropoesis. The pathological diagnosis was that of erythroblastomatosis until the autopsy, when the correct diagnosis of neuroblastoma was established.

In early stages of the disease, when only one bone is involved, the differentiation from Ewing's tumor may be difficult. Colville and Willis discussed the similarities presented by these different tumors, and reached a conclusion, that Ewing's tumor cannot be classified as a specific pathological entity, but may be of various pathological origin. A diagnosis of Ewing's tumor according to these authors is not justified without a careful complete autopsy.

RADIATION THERAPY

Irradiation of neuroblastoma has been tried by several authors, most of whom agree, that it has no effect on the progress of the disease. Hauser and Rypins were impressed by temporary response of these lesions to irradiation and suggested that if this method of treatment could be instituted early, the clinical course may become more favorable. We have treated two of our cases using similar factors as advocated in the literature, but found the results unsatisfactory.

REPORT OF CASES

Case 1. (No. 69096). J.M., white boy, 6 years of age, was first admitted July 1, 1933, complaining of pain in the right hip and leg. Five months prior to admission patient had nausea and vomiting, later followed by pain in the right hip and leg, resulting in inability to walk. Examination revealed a fairly well developed, actually ill child, with flexion contracture of the right hip, with extreme pain on motion. The scalp was covered with painless nodules, varying in size from an olive to an English walnut. On deep palpation over

the scalp numerous depressions could be elicited. The Hbg. was 43 (Sahli), R.B.C. 2,250,000, W.B.C. 6,300. Urine examination was negative.

Roentgenograms of the skeleton revealed marked destruction of the pelvis, the epiphyseal ends of both femora, and tibiae, dorsal and lumbar spine and ribs. There was a pathological fracture of the right femur at the level of the trochanter. There were numerous irregular areas of bone destruction of various sizes throughout the bones of the cranial vault. Periosteum along the shafts of both femora was elevated, in some areas spiculae perpendicular to the long axis of the bones were observed.

Patient was discharged from the hospital July 12, 1933, but returned shortly thereafter with increased symptoms and an apparent loss of sensation in both lower extremities. He grew weaker and expired due to extensive metastases.

On post mortem examination a tumor of the right suprarenal gland was found. The tumor 25 by 20 mm. in size was completely surrounded by a capsule, which stripped with difficulty. The surface was irregular, granular in appearance, while the tumor tissue was very compact, with pin point nodules and striae radiating from the center. There were numerous metastases to the skeleton.

Microscopic examination of the adrenal showed tumor with abundant protoplasma. In some areas this had the arrangement and staining characteristics of fibrils. In other areas it had the appearence of dense fibrous stroma. Scattered throughout were islands and an occasional strand of tumor cells, which showed considerable variation in size, shape, and staining characteristics. In some areas there was a tendency to rosette formation. Tumor cells within the adrenal gland tended to be large and some were multinucleated, while in the metastatic lesion, and in some areas within the gland itself, the cells were small, round or ovoid, and took a very dark staining.

Sections of the tumor from the skull, ribs, and vertebrae were all similar. There was a delicate, diffuse, pale staining stroma, many small blood spaces, and the tumor cells, although heterogeneously arranged, had a tendency to irregular grouping and in many areas appeared in rows. The cytoplasm for the most part was scanty in these areas and the nuclei tended to be small, but showed considerable variation in size, shape, and staining qualities.

Case 2. (No. 89843). I.F.K., white girl, four years of age, was admitted to the hospital December 26, 1936. In October, 1935, the parents noticed that the child was limping on the left leg. After several days the

Figure 2. Metastases to the pelvis and femora; periosteal reaction along the shaft of the involved segments of both femora.

walk had improved but a few months later became worse again. A tonsillectomy was performed and the child received treatment for "rheumatism." Since September the child was unable to walk because of pain in the left leg and weakness. Recently the parents noticed a painful swelling of the right arm. Examination revealed exophthalmus of both eyes; the cervical axillary and inguinal nodes were enlarged. Numerous discrete nodules were palpable on the scalp. There was marked tenderness on manipulation of the knees and elbows, and deep tenderness on pressure over the long bones. The temperature ranged from 102 to 103 degrees. The Hbg. was 15 per cent (Sahli), R.B.C. 1,190,000, W.B.C. 8,900.

Roentgenograms of the skeleton showed numerous small areas of bone destruction within both femora, upper thirds of both tibiae and also the right humerus. These rarefactions were observed within the spongiosa and cortex of the long bones. The periosteum along the involved shafts was thickened and elevated. The skull revealed a moth eaten appearance of the frontal and parietal bones. Several perpendicular bone spiculae arose from the outer table of the frontal bone. On repeated examination the cranial sutures became distended.

A biopsy of the tissue obtained on aspiration of a nodule on the scalp showed scattered colonies or islands of small moderately dark blue stained cells having a great variety of shapes and heterogeneously arranged. There appeared to be no stroma and the cytoplasm was not demonstrable. Microscopic interpretation was as follows: "This tumor falls into the group of small round cell sarcoma, and with the clinical findings, the diagnosis of neuroblastoma is reasonably certain."

Patient received a series of roentgen treatments, after which she was discharged from the hospital. She expired shortly after her return home.

Case 3. (No. 97,389). E.L.W., white girl, 5 years of age was admitted July 1, 1937. Patient had been ill for three months prior to admission, complaining of weakness, loss of appetite and pain in the left chest and both legs. One month prior to admission several nodes were palpable on the scalp, one of which was incised by the attending physician. Since that time there has been continuous drainage from the operative wound.

On physical examination a fluctuating mass was palpable in the right fronto-parietal region and a similar tumor on the right parietal prominence. Discrete, firm, elastic, non-tender, movable nodes were palpable along the suboccipital and postauricular region. Similar nodes were distributed on both sides of the neck. There was a venous enlargement over the temporal and frontal regions, bilateral exophtalmus and edema of both upper eyelids. The abdomen was distended. A large mass extending from the right costal margin beyond the midline and downward below the umbilicus was palpated. The blood examination showed a marked secondary anemia without an elevation of the white cells.

Figure 3. Destructive lesions within the distal metaphysis of the femur; the periosteum is elevated; periosteal lipping and perpendicular spiculae, resembling osteogenic sarcoma are noticeable.

Roentgenograms of the skeleton revealed marked distention of the cranial sutures. There were several areas of rarefaction within the proximal third of the shaft of the right humerus, with periosteal elevation along the shaft. Similar changes were encountered within the left humerus, both femora, tibiae and fibulae.

A biopsy of one of the cervical nodes showed that the tissue consisted almost entirely of a very poorly differentiated embryonal type of tumor. The cells were for the most part very irregular with dark staining nuclei, which almost completely occupied the entire cell. There was no definite arrangement, but a tendency to grow in sheets and masses and in some areas there was a small amount of stroma. In some areas the cells were grouped together in compact dark staining masses. The cells resembled in some respects small lymphocytes. Some of the cells were larger and did not stain very intensely. Diagnosis of neuroblastoma was made.

The patient was discharged from the hospital and expired a few weeks later.

Case 4. (No. 105529). R.B.D., white boy, two years of age, was admitted April 8, 1940. Early that year the parents noticed a rapidly increasing swelling of the abdomen. The child lost weight and grew weaker progressively. On examination a large mass filling the entire abdomen was found. The tumor was firm and slightly tender. The Hgb. was 66 per cent (Sahli), R.B.C. 3,860,000, W.B.C. 10,600.

Roentgenograms of the abdomen demonstrated a large soft tissue mass in the right abdomen; the right kidney could not be discerned. A retrograde pyelogram showed a marked displacement of the right ureter beyond the midline; the pelvis and calices were filled, but flattened by extrinsic pressure on the kidney. Films of the skeleton revealed two round areas of destruction within the bones of the cranial vault, and a moth eaten appearance of the proximal fourth of the shaft of the right humerus, with periosteal reaction along the shaft. A biopsy obtained

Figure 4. Roentgenogram of the specimen of the involved bones of the skull, femur, and rib.

from one of the cranial nodules showed tumor tissue. The cells were fairly uniform in size; the hyperchromic polyhedral cells had a small nucleus. Numerous small blood vessels were present. In many areas there was a definite pseudo-rosette arrangement of the tumor cells. In addition many small fibrils were interspersed among the tumor cells. The pathological diagnosis was neuroblastoma.

The patient was given a series of roentgen treatments, but failed to improve, and was discharged from the hospital May 14, 1940.

SUMMARY

1. Four cases of neuroblastoma (Hutchison's type) have been reported.

2. These tumors represent a highly malignant variant of neoplasms arising from the sympathetic nervous system, and are associated with extensive skeletal metastases.

3. The roentgen appearance of these metastases has been found to be quite characteristic, although in the differentiation several other pathological conditions may have to be considered. These have been briefly discussed.

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Giant Cell Tumor with Malignant Change*

ONIS GEORGE HAZEL, M.D.
L. K. CHONT, M.D.
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Benign giant cell tumor is a disease of adults and differs from solitary bone cysts, to which it is closely related, in that it has a shorter duration of symptoms, a greater tendency to progress and is invariably associated with an epiphysis where osteogensis via cartilage occurs.[1] Nearly half or all

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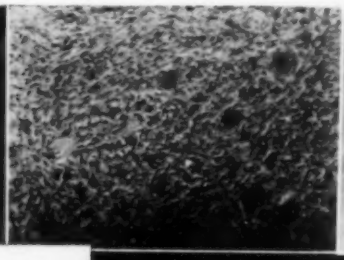


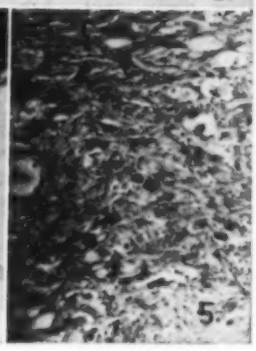
Figure 1. Epiphysis of lower end of femur 17 years after curettement and upper end of fibula one year post operative. There has been no recurrence in either site.

Figure 2. Tissue removed from the fibula. There are many foreign-body type giant cells typical of those seen in benign giant cell tumors and also spindle shaped tumor cells with large nuclei.

Figure 3. Roentgenogram of chest nine months after removal of tumor from the fibula which was thought to have been a giant cell tumor.

Figure 4. The first metastasis to the soft tissues was on the right side of the neck, the posterior surface.

Figure 5. Necrotic tissue from the neck tumor. This tumor recurred rapidly after surgical removal and the recurrence did not respond to large doses of deep x-ray.



cases of giant cell tumor are in the third decade of life. The most common sites are in the epiphysis of the lower end of the femur and radius and the upper part of the tibia.

Geschickter states that, "The usual clinical history is a sequence of trauma, pain, tumor and fracture extending over a period of from two to fourteen months." Roentgenograms reveal the bone destructive character. The gross specimen is usually hemorrhagic and may be any color from red to black. The pathological findings are very characteristic and will be mentioned later.

The question of etiology is yet unsettled. Mallory and Codman[2] are of the opinion that it is a repair process following intra-osseous hemorrhagic due to rupture of nutrient vessels. The opponents of this opinion insist that giant cell tumors are true blastomata.

TREATMENT

The most frequently used method is curettage, with a subsequent swabbing with phenol and alcohol. During recent years roentgen ray therapy is replacing surgical treatment in many clinics.[3] The very protracted type of deep x-ray therapy as used in some types of malignancy is not indicated as it causes the lesion to increase in size. In giant cell tumor of the spine and skull, x-ray therapy is the only treatment.

In recurrences following inadequately curetted lesions, x-ray is of questionable value. In such cases it is best to curette again or to do an amputation. Amputation is often necessary when suppurative osteomyelitis follows biopsy or curettage.

PROGNOSIS

Herendeen[3] states that "Twenty-five per cent of all giant cell tumors which have been curetted, ultimately recur, and of these recurrent tumors not more than fifty per cent are cured by subsequent curettage or radiation therapy."

MALIGNANT TRANSFORMATION

The question as to whether or not a giant cell tumor may become malignant and metastasize to the lungs is yet unsettled. Geschickter and Copeland do not believe that giant cell tumors ever metastasize.[4] They are of the opinion that all such metastasis are from osteogenic sarcoma. The authors are of the opinion that the ability to develop a benign tumor carries with it the potentiality of malignant tumors. In this case the appearance of a malignant bone tumor in an individual who has previously had a benign bone tumor and the malignant tumor showing some cellular structures that were present in the benign tumor.

CASE HISTORY

Mrs. S., aged 46, developed a painful tumor of the lower right femur seventeen years ago. This was curetted and the tissue reported as a benign giant cell tumor. One year ago she again noticed a painful tumor just below the right knee. A roentgenogram showed a destructive lesion at the epiphysis of the upper end of fibula. This was curetted and reported as a be-

nign giant cell tumor. Nine months after this operation she noticed a large, rapidly growing tumor on the back of the neck. This tumor was removed surgically and the tissue studied. The tumor recurred within a month and she developed a cough and noticed an increasing sense of weakness. Roentgenogram of chest revealed an egg sized tumor in the left lung and a smaller tumor in the right lung. It was then thought best to give a deep x-ray therapy to the neck and chest. She was given treatment daily for one month. The tumor on the neck and in the lungs was somewhat reduced in size but it was evident that the tissue was not radio sensitive. She did well for two months then developed multiple metastasis with no less than twelve tumor masses in the soft tissues throughout the body. She is now moribund and taking snake venom.

HISTOPATHOLOGY

Microscopic examination of several sections from different parts of the tumor from the fibula and the neck shows a very proliferating type of tumor growth composed for the most part of spindle cells without any special type of arrangement. The growth is somewhat similar to that of connective tissue as far as arrangement is concerned. There are numerous blood vessels and blood spaces throughout all the sections. The growth is rather compact and in many parts there is evidence of pressure necrosis.

The nuclei of the cells are large and there are numerous mitotic figures, and there are also pleomorphic forms. In many areas scattered throughout some of the sections there are numerous multi-nucleated giant cells. These are of the foreign-body type and typical of those found in benign giant cell tumors. There is considerable hemorrhage in some places in which the blood is extravasated freely throughout the tumor growth particularly in the region adjacent to the giant cells. In practically all places where giant cells are found, predominating stroma is that of tumor growth. There is little differentiation of the tumor cells. They are, for the most part, rather uniform in size with the exception of the nuclei and are growing in very dense masses throughout. Many of the nuclei show vacuolations. Some nuclei are dark staining and others pale. Considerable fat is mixed with the tumor growth in various areas.

In some of the sections made from the parts of the tumor there is a predominance of normal appearing dense connective tissue, but throughout these are found numerous scattered individual tumor cells in which cytoplasm is quite abundant. The nuclei of these cells is very wild appearing, varying greatly in size as well as shape. There is a slight disposition in the neighborhood of many of these cells for deposition of dark purple staining material which is apparently bone. In one part of the tumor growth there is a rather thick layer of fibrous and necrotic material in which there are numerous leukocytes. In none of these sections is it possible to demonstrate any degree of bone formation particularly in the nature of spicules. In view of the marked proliferating tendency of this tumor, the tendency to the bone formation of individual cells in some places and with the marked variation in size and shape of the cells, this tumor is undoubtedly malignant. The diagnosis is oesteogenic sarcoma sclerosing type.

SUMMARY

A case of malignant osteogenic sarcoma with metastasis is reported sixteen years following a benign giant cell tumor. The metastastic tumor contained giant cells similar to those in the benign tumor. This implies a malignant transformation or the ability of a tissue to develop both malignant and benign tumors with some cellular structures in common. X-ray therapy is of value in benign giant cell tumors, but of little or no value in osteogenic sarcoma with metastasis.

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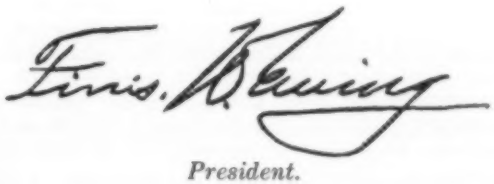
• THE PRESIDENT'S PAGE •

Our 49th Annual Convention marked another outstanding year of accomplishments in organized medicine in Oklahoma. I have attended other state meetings this year and have derived much valuable information, and have thoroughly enjoyed their programs together with the fine friendly relationship. I seem to have found a more fraternal spirit constantly developing.

Each organization I have visited has its pet worry the same as we have. Much time and effort is expended in correction of these troubles. The primary effort in each instance is directed towards giving better and more intelligent service to those we serve and to improve our profession.

I have found the same patriotic spirit prevailing in other states that exists in our own, and members of our profession wherever they are found are not only ready but anxious to lend every effort towards the support of our local and Government institutions.

We have a right to feel proud of the accomplishments we have made but we must remember that accomplishments count for little unless they are maintained, and this can only be done if we are thoroughly interested in the future of our profession.



President.

EDITORIALS

FIRST AID

Traumatic Surgery is the art of the preservation of life, limb and normal conture of the injured person and is being given very special attention by many of our surgeons. Skill is being gradually developed along this line and the results are being obtained today that 25 years ago were impossible.

In years gone by these cases very largely came in connection with industry, and special arrangements were made for their primary care at our industrial plants, but today every physician even in the most rural districts is called upon to give first-aid, and but few seem to feel sufficiently interested to prepare themselves to render this service proficiently. It may be that they feel that the care of the seriously injured is work for the experienced surgeon, and in their haste to place the case in his hands, they overlook some of the very necessary primary measures which can only be accomplished at the line and the results are being obtained totransported.

Control of hemorrhage, immobilization of fracture, sterile dressing of open wounds and treatment of shock must be attended to at once, and both mortality and morbidity are to a considerable extent in adverse proportion to the skill and judgement with which these measures are accomplished.

Our high way first-aid stations are a step in the right direction, and in most instances the personnel of these stations is equipped by training and material to render intelligent care. They do not have at hand opiates to relieve pain, consequently they do all the other things to make the injured person as comfortable as possible, and this tends to good service as it is far better to relieve the pain resulting from a fracture by proper immobilization than by the use of morphine, and the recovery period will be decidedly shortened.

Neither do they suture wounds, which is far better than doing a suture operation poorly with resulting tendon or nerve injury or facial disfigurement. The preparation of wounds for suture must be carried out with the most maticulous technic as to asepsis and proper suture material. The use of face masks and, of course, sterile gloves is necessary and strong antiseptics cannot take their place.

Let's all give more thoughtful attention to first-aid. It is not a minor procedure, as so much depends upon this service as to the ultimate disability or disfigurement resulting.

DEAR EDITOR:

I have just read your comment on Lieut. Col. John H. Schaefer's statement. I admit there is no organization as large and powerful as the medical profession that would be behind a program 100 per cent. Yet, I agree with Col. Schaefer in reference to calling a spade a spade. This spade has been referred to all too softly as a small tool for tilling the soil.

If Oklahoma County represents a cross section of Oklahoma, and Oklahoma represents a cross section of the United States, then I must say not 75 per cent of the doctors are behind this program.

The Adjutant of the Headquarters of the Second Military Area informed me that at least 25 per cent of all Lieutenants of the medical department called to Active Duty had resigned, while *only* 15 *officers from all other branches of the service*, which amounts to over 1,200, *had tendered their resignation.*

In the organization of the Army there is about one Medical Officer to every 25 of the line. It must not be forgotten that the line officers represent every business and profession. Yet they did not consider themselves too indispensable to their community not to aid this great Defense Program. Many of them had as many dependents and obligations as any of the Medical Officers who resigned. These line officers considered, since they were allowed to attend our schools and colleges and obtain a subsistence and livelihood for themselves and families, they owed it to their country to aid in this great program. Their Active Duty training has been a two weeks paid vacation each year. They owed enough to their country to prepare to defend her to the last if necessary. They have taken their commission seriously, and when they read—"To all who shall see these presents, Greeting: Know Ye that reposing special trust and confidence in the patriotism, valor, fidelity and abilities of ——(name)——, appoint him Officer of the line." Perhaps this was overlooked by the Medical Officer who has resigned.

We speak of strikes and strikers in great scorn and disgust, but we do not consider the Officer of the Medical Department who resigns after enjoying all the privileges of being a free American and what it has given him.

Mr. Editor, is it because these doctors think they are little tin gods, too good to defend their country, or have several of their competitors answered the call of their country, leaving behind a lucrative practice for those who stay at home? Or is it due to a lack of intestinal fortitude?

Yes, let every doctor examine himself, go to his history book and see how many doctors fought and even died on the battlefield that this Nation, Our Country, might live and give them and their children the blessings and privileges they now enjoy.

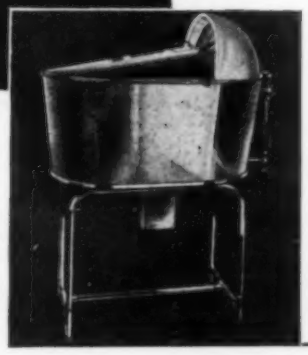
S. F. WILDMAN, M.D.

AN APPRECIATION

When Dr. L. S. Willour declined to be considered as a candidate for re-election for Secretary-Treasurer of the Association, he thereby voluntarily terminated what is probably a record length of service in the House of Delegates, as well as his service as Secretary-Treasurer for the past several years. The best testimonial as to his service as Secretary-Treasurer is the obvious excellent state of affairs of the Association in general and of his office in particular, as he turns it over to his worthy successor, in comparison with the conditions at the beginning of his tenure. This is easy to understand by those close enough to him to appreciate fully the forcefulness of his character, the zeal with which he has applied himself to the execution of his duties and his constant faithfulness to the best interests of organized medicine in Oklahoma.

These words merely place in the permanent records of the Association what all full well appreciate and understand. It is given to but few in the progress of organized medicine in Oklahoma to leave so marked an impression for the better. Time will only serve to enhance his stature as a long and faithful servant in the cause of better medicine and to deepen the appreciation of his works.

To those who might question the propriety of these remarks let it be said that this was done by common consent of a large number of his friends who thought it best to override his editorial prerogatives in the matter.



RIGHT: Hess Infant incubator. ABOVE: Hess incubator with Hess infant oxygen therapy unit in position for oxygen administration.

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PRATT, T. W. ..... *Cheyenne*
SLABAUGH, R. M. ..... *Sayre*
SPEED, H. K. ..... *Sayre*
STAGNER, G. H. ..... *Erick*
STANDIFER, O. C. ..... *Elk City*
TISDAL, V. C. ..... *Elk City*

BLAINE

BROWNING, J. W. (honorary) ..... *Geary*
CURTIN, VIRGINIA OLSON ..... *Watonga*
GRIFFIN, W. F. ..... *Watonga*
KIRBY, L. R. ..... *Okeene*
MURDOCH, L. H. ..... *Medical Arts Bldg., Okla. City*

BRYAN

BAKER, ALFRED ..... *Camp Barkeley, Abilene, Texas*
BLOUNT, W. T. ..... *Durant*
CAIN, P. L. (honorary) ..... *Albany*
COCHRAN, R. L. ..... *Caddo*
COKER, B. B. ..... *Durant*
COLWICK, J. T. ..... *Durant*
COLWICK, O. J. ..... *Durant*
DICKEY, R. P. ..... *Caddo*
DUEWALL, R. H. ..... *Fort Sill*
FLYTHE, ALLEN G. ..... *Durant*
*FUSTON, H. B. ..... *Bokchito*
HAYNIE, JOHN A. ..... *Durant*
HAYNIE, W. KEILLER ..... *Durant*
HYDE, WILLIAM A. ..... *Durant*
McCALIB, D. C. ..... *Colbert*
MOORE, CHARLES F. ..... *Durant*
PRICE, CHARLES G. ..... *Durant*
RUSHING, G. M. ..... *Durant*
SAWYER, R. E. ..... *Durant*
SCOTT, GEORGE WARREN ..... *Tishomingo*
TONEY, S. M. ..... *Bennington*
WANN, C. E. (honorary) ..... *Albany*
WELLS, A. J. ..... *Calera*
WHARTON, J. T. ..... *Durant*

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CADDO

ANDERSON, P. H. ..... *Anadarko*
BENWARD, JOHN H. ..... *Carnegie*
CAMPBELL, GEORGE C. ..... *Anadarko*
COOK, ODIS A. ..... *Anadarko*
COOK, EDWARD T., JR. ..... *Anadarko*
DIXON, W. L. ..... *Cement*
HASLAM, G. E. ..... *Anadarko*
HAWKINS, E. W. ..... *Carnegie*
HAWN, W. T. ..... *Binger*
HENKE, J. R. ..... *Hydro*
JOHNSTON, R. E. ..... *Anadarko*
KERLEY, W. W. ..... *Anadarko*
McCLURE, P. L. ..... *Fort Cobb*
McMILLAN, C. B. ..... *Gracemont*
MILES, J. B. ..... *Anadarko*
PATTERSON, FRED L. ..... *Carnegie*
PUTNAM, W. B. ..... *Carnegie*
ROGERS, F. W. ..... *Carnegie*
STOKES, LOWELL ..... *Anadarko*
SULLIVAN, CLARENCE B. ..... *Carnegie*
TAYLOR, ALBERT H. ..... *Anadarko*
WILLIAMS, R. W. ..... *Anadarko*

CANADIAN

ADERHOLD, THOMAS M. (honorary) ..... *El Reno*
BROWN, HADLEY C. ..... *El Reno*
CLARK, FRED H. ..... *El Reno*
DEVER, HARVEY K. ..... *El Reno*
GOODMAN, GEORGE LEROY ..... *Yukon*
HEROD, PHILIP F. ..... *El Reno*
JOHNSON, ALPHA L. ..... *El Reno*
LAWTON, W. P. ..... *El Reno*
MYERS, PIRL B. ..... *El Reno*
PHELPS, JOSEPH T. ..... *El Reno*
PHELPS, MALCOM E. ..... *El Reno*
RICHARDSON, D. P. ..... *Union City*
RILEY, JAMES T. ..... *El Reno*

CARTER

BARKER, E. R. ..... *Healdton*
BOADWAY, F. W. ..... *Ardmore*
CANTRELL, D. E., JR. ..... *Healdton*
CANTRELL, D. E., SR. ..... *Healdton*
CANTRELL, EMMA JEAN ..... *Healdton*
COX, J. L. ..... *Ardmore*
GORDON, J. M. ..... *Ardmore*
HARDY, WALTER ..... *Ardmore*
HATHAWAY, W. G. ..... *Lone Grove*
HIGGINS, H. A. ..... *Ardmore*
JACKSON, T. J. ..... *Ardmore*
JOHNSON, C. A. ..... *Wilson*
JOHNSON, WALTER ..... *Ardmore*
KETCHERSID, J. W. ..... *Countyline*
LOONEY, M. D. ..... *Marietta*
MEAD, W. W. ..... *Ardmore*
MOTE, W. R. ..... *Ardmore*
MOXLEY, J. N. ..... *Ardmore*
POLLOCK, JOHN R. ..... *Ardmore*
SAIN, W. C. ..... *Ardmore*
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STONE, S. N., JR. ..... *Ardmore*
SULLIVAN, R. C. ..... *Ardmore*
VEAZEY, J. HOBSON ..... *Ardmore*
VEAZEY, LYMAN C. ..... *Ardmore*
VON KELLER, F. P. ..... *Ardmore*

CHEROKEE

ALLISON, J. S. ..... *Tahlequah*
BAINES, SWARTZ ..... *Tahlequah*
DEUTSCH, HARRY L. ..... *Stilwell*
DYER, ISADORE ..... *Tahlequah*
GRAY, JAMES KARADINE ..... *Tahlequah*

MASTERS, H. A. ..... *Tahlequah*
MATHEWS, GRADY F. ..... *State Health Dept., Okla. City*
McINTOSH, R. K., JR. ..... *Tahlequah*
MEDEARIS, P. H. ..... *Tahlequah*
NEWLIN, WILLIAM H. ..... *Sallisaw*

CHOCTAW

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HALE, C. H. ..... *Boswell*
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CLEVELAND

ATKINS, W. H. ..... *Norman*
BALLARD, RAY H. ..... *Norman*
BERRY, CURTIS ..... *Norman*
BOBO, C. S. (honorary) ..... *Norman*
BOYD, THOMAS M. (honorary) ..... *Norman*
BRAKE, CHARLES A. ..... *Norman*
BUFFINGTON, F. C. ..... *Norman*
CARROLL, W. B. ..... *Norman*
FOWLER, W. A. ..... *Norman*
GASTINEAU, F. T. ..... *Norman*
GRIFFIN, D. W. ..... *Norman*
HADDOCK, J. L. ..... *Norman*
HADDOCK, PHIL ..... *Norman*
HOOD, J. O. ..... *Camp Barkeley, Abilene, Texas*
HOWELL, O. E. ..... *Norman*
LAMBERT, J. B. ..... *Lexington*
MAYFIELD, W. T. ..... *Norman*
MERRITT, IVA S. ..... *Norman*
NIELSEN, GERTRUDE ..... *Norman*
PROSSER, MOORMAN P. ..... *Norman*
RAYBURN, CHARLES R. ..... *Norman*
REICHERT, R. J. ..... *Moore*
RIEGER, J. A. ..... *Norman*
SCHMIDT, ELEANORA ..... *Norman*
STEEN, C. T. ..... *Norman*
STEPHENS, E. F. ..... *Norman*
WICKHAM, M. M. ..... *Norman*
WILEY, GEORGE A. ..... *Norman*
WILLARD, D. G. ..... *Norman*

COMANCHE

ANGUS, DONALD A. ..... *Lawton*
ANGUS, HOWARD ..... *Lawton*
ANTONY, JOSEPH T. ..... *Lawton*
BARBER, GEORGE S. ..... *Lawton*
DOWNING, GERALD G. ..... *Lawton*
DUNLAP, ERNEST B. ..... *Lawton*
FERGUSON, LAWRENCE W. ..... *Lawton*
FOX, FRED T. ..... *Lawton*
HAMMOND, FRED W. ..... *Lawton*
HATHAWAY, EUEL P. ..... *Lawton*
JOYCE, CHARLES W. ..... *Fletcher*
KNEE, LOREN C. ..... *Lawton*
LUTNER, THOMAS R. ..... *Lawton*
MARTIN, CHARLES M. ..... *Elgin*
PARSONS, O. L. ..... *Lawton*

COTTON

BAKER, G. W. ..... *Walters*
CALVERT, HOWARD A. ..... *Walters*
HOLSTEAD, A. B. ..... *Temple*
JONES, M. A. ..... *Walters*
SCISM, MOLLIE ..... *Walters*
TALLANT, GEORGE A. ..... *Walters*
VAN MATRE, REBER M. ..... *Walters*

CRAIG

ADAMS, F. M. ..... *Vinita*
BAGBY, LOUIS ..... *Vinita*
BRADSHAW, J. O. ..... *Welch*
DARROUGH, J. B. ..... *Vinita*
HAYS, P. L. ..... *Vinita*
HERRON, A. W. ..... *Vinita*
LEHMER, ELIZABETH E. ..... *Vinita*
MARKS, W. R. ..... *Vinita*
McMILLAN, J. M. ..... *Vinita*
McPIKE, LLOYD H. ..... *Vinita*
MITCHELL, R. ..... *Muskogee*
SANGER, PAUL G. ..... *Vinita*
STOUGH, D. B. ..... *Vinita*
WALKER, C. F. ..... *Grove*

CREEK

COPPEDGE, O. S. ..... *Depew*
COWART, O. H. ..... *Bristow*
CROSTON, GEORGE C. ..... *Sapulpa*
CURRY, J. F. ..... *Sapulpa*
HAAS, H. R. ..... *Sapulpa*
HOLLIS, J. E. ..... *Bristow*
JONES, ELLIS ..... *Sapulpa*
KING, E. W. ..... *Bristow*
LAMPTON, J. B. ..... *Sapulpa*
LEWIS, P. K. ..... *Sapulpa*
LONGMIRE, W. P., JR. ..... *Sapulpa*
LONGMIRE, W. P., SR. ..... *Sapulpa*
McDONALD, C. R. ..... *Mannford*
MOTE, PAUL ..... *Sapulpa*
OAKES, CHARLES GRATTON ..... *Sapulpa*
PICKHARDT, W. L. ..... *Sapulpa*
REESE, C. B. ..... *Sapulpa*
REYNOLDS, E. W. ..... *Bristow*
REYNOLDS, S. W. ..... *Drumright*
SCHRADER, CHARLES T. ..... *Bristow*
SISLER, FRANK H. ..... *Bristow*
STARR, O. W. ..... *Drumright*

CUSTER

ALEXANDER, C. J. ..... *Clinton*
BOYD, T. A. ..... *Weatherford*
BURKE, RICHARD M. ..... *Clinton*
CUNNINGHAM, C. B. ..... *Clinton*
CUSHMAN, H. R. ..... *Clinton*
DEPUTY, ROSS ..... *Clinton*
DOLER, C. ..... *Clinton*
ENGLEMAN, C. C. ..... *Clinton*
FRIZZELL, J. T. ..... *Clinton*
GAEDE, D. ..... *Weatherford*
GOSSOM, K. D. ..... *Clinton*
HINSHAW, J. R. ..... *Butler*
KENNEDY, LOUIS ..... *Clinton*
LAMB, ELLIS ..... *Clinton*
LINGENFELTER, PAUL B. ..... *Clinton*
LOYD, E. M. ..... *Dewey*
McBURNEY, C. H. ..... *Clinton*
MILLER, E. A. ..... *Clinton*
PAULSON, ALVIN W. ..... *Randolph Field, Texas*
ROGERS, McLAIN ..... *Clinton*
RUHL, N. E. ..... *Weatherford*
STOLL, A. A. ..... *Clinton*
TISDAL, WILLIAM C. ..... *Clinton*
VIEREGG, F. R. ..... *Clinton*
WIGGINS, C. W. ..... *Clinton*
WILLIAMS, GORDON ..... *Weatherford*
WOOD, J. GUILD ..... *Weatherford*

GARFIELD

CHAMPLIN, PAUL B. ..... *Enid*
CORDONNIER, BYRON J. ..... *Enid*
DUFFY, FRANCIS M. ..... *Enid*
FEILD, JULIAN ..... *Enid*
HAMBLE, V. R. ..... *Enid*
HARRIS, D. S. ..... *Drummond*
HINSON, BRUCE R. ..... *Enid*
HOPKINS, P. W. ..... *Enid*
HUDSON, F. A. ..... *Enid*
HUDSON, HARRY H. ..... *Enid*
JACOBS, R. G. ..... *Naval Hospital, San Diego, Calif.*
JOYCE, FRANK THOMAS ..... *Chickasha*
MAYBERRY, S. N. ..... *Enid*
McCROSKIE, M. R. ..... *Fairview*
McEVOY, S. H. ..... *Enid*
MERCER, WENDELL J. ..... *Enid*
METSCHER, ALFRED J. ..... *Enid*
NEILSON, W. P. ..... *Enid*
NEWELL, W. B., JR. ..... *Enid*
NEWELL, WALDO B., SR. ..... *Enid*
REMPEL, PAUL H. ..... *Enid*
RHODES, W. H. ..... *Enid*
ROBERTS, D. D. ..... *Enid*

ROSS, GEORGE ..... *Enid*
ROSS, HOPE ..... *Enid*
RYAN, ROBERT O. ..... *Fairview*
SHANNON, HUGH R. ..... *Boley*
SHAVER, S. R. ..... *Fairview*
SHEETS, MARION E. ..... *Enid*
SPECHT, ELSIE L. ..... *Fairview*
TALLEY, EVANS E. ..... *Enid*
VANDEVER, H. F. ..... *Enid*
WALKER, JOHN R. ..... *Enid*
WATSON, J. M. ..... *Enid*
WILSON, GEORGE S. ..... *Enid*
WOLFF, E. J. ..... *Waukomis*

GARVIN

ALEXANDER, ROBERT M. ..... *Paoli*
BURNS, SAMUEL L. ..... *Stratford*
CALLAWAY, JOHN R. ..... *Pauls Valley*
GREENING, WILLIAM P. ..... *Pauls Valley*
GROSS, T. F. ..... *Lindsay*
JOHNSON, GALVIN L. ..... *Pauls Valley*
LINDSEY, RAY H. ..... *Pauls Valley*
MONROE, HUGH H. ..... *Lindsay*
PRATT, CHARLES M. ..... *Lindsay*
ROBBERSON, MARVIN E., JR. ..... *Wynnewood*
ROBBERSON, MARVIN E., SR ..... *Wynnewood*
SHI, AUGUSTIN H. ..... *Stratford*
SHIRLEY, EDWARD T. ..... *Pauls Valley*
WILSON, H. P. (honorary) ..... *Wynnewood*

GRADY

BAZE, ROY E. ..... *Chickasha*
BAZE, WALTER J. ..... *Chickasha*
BONNELL, W. L. ..... *Chickasha*
BOON, U. C. ..... *Chickasha*
BYNUM, TURNER ..... *Chickasha*
COOK, W. H. ..... *Chickasha*
DOWNEY, D. S. ..... *Chickasha*
EMANUEL, LEWIS E. ..... *Chickasha*
EMANUEL, ROY E. ..... *Chickasha*
HENNING, A. E. ..... *Tuttle*
LEEDS, A. B. ..... *Chickasha*
LITTLE, AARON C. ..... *Minco*
MASON, REBECCA H. ..... *Chickasha*
McCLURE, H. M. ..... *Chickasha*
MITCHELL, C. P. ..... *Chickasha*
PYLE, OSCAR S. ..... *Chickasha*
RENEGAR, J. F. ..... *Tuttle*
WOODS, LEWIS E. ..... *Chickasha*

GRANT

HARDY, I. V. ..... *Medford*
LAWSON, E. E. ..... *Medford*
LIVELY, S. A. ..... *Wakita*

GREER

BORDER, G. F. ..... *Mangum*
CHERRY, G. P. (honorary) ..... *Mangum*
COLLIER, E. K. ..... *Tipton*
HOLLIS, J. B. ..... *Mangum*
LANSDEN, J. B. ..... *Granite*
LEWIS, R. W. ..... *Granite*
LOWE, J. T. ..... *Mangum*
MEREDITH, J. S. ..... *Duke*
POER, E. M. ..... *Mangum*
RUDE, JOE C. ..... *Duke Hospital, Durham, N. C.*

HARMON

HOLLIS, L. E. ..... *Hollis*
HOPKINS, S. W. ..... *Hollis*
HUSBAND, W. G. ..... *Hollis*
*JONES, JAMES E. (honorary) ..... *Hollis*
LYNCH, R. H. ..... *Hollis*
RAY, W. T. (honorary) ..... *Gould*
STREET, O. J. ..... *Gould*
YEARGAN, W. M. ..... *Hollis*
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HASKELL

CARSON, WILLIAM S. ..... *Keota*
RUMLEY, J. C. ..... *Stigler*
THOMPSON, W. A. ..... *Stigler*
WILLIAMS, N. K. ..... *McCurtain*

HUGHES

DAVENPORT, A. L. ..... *Holdenville*
FLOYD, W. E. ..... *Holdenville*
HAMILTON, S. H. ..... *Nov*
HICKS, C. A. ..... *Holdenville*
HOWELL, H. A. ..... *Holdenville*
JOHNSTON, L. A. S. ..... *Holdenville*
KERNEK, CLYDE ..... *Holdenville*
MAYFIELD, IMOGENE ..... *Holdenville*
MORRIS, R. D. ..... *Allen*
MUNAL, JOHN ..... *Holdenville*
PRYOR, V. W. ..... *Holdenville*
SHAW, JAMES F. ..... *Wetumka*
TAYLOR, W. L. ..... *Holdenville*
WALLACE, C. S. ..... *Holdenville*

JACKSON

ABERNETHY, E. A. ..... *Altus*
ALLGOOD, J. M. ..... *Altus*
BERRY, THOMAS M. ..... *CCC Camp, Sentinel*
CROW, E. S. ..... *Olustee*
FOX, R. H. ..... *Altus*
HIX, J. B. ..... *Altus*
HOLT, WILLARD D. ..... *Altus*
MABRY, E. W. ..... *Altus*
McCONNELL, L. H. ..... *Altus*
REID, J. R. ..... *Altus*
SPEARS, C. G. ..... *Altus*
STARKEY, W. A. ..... *Altus*
STULTS, J. S. (honorary) ..... *Altus*
TAYLOR, R. Z. ..... *Blair*

JEFFERSON

ANDRESKOWSKI, W. T. ..... *Ryan*
BROWNING, W. M. ..... *Waurika*
COLLINS, D. B. ..... *Waurika*
DERR, J. I. ..... *Waurika*
DILLARD, J. A. ..... *Waurika*
EDWARDS, F. M. ..... *Ringling*
HOLLINGSWORTH, J. I. ..... *Waurika*
MAUPIN, C. M. ..... *Waurika*
WADE, L. L. ..... *Ryan*

JOHNSTON

LOONEY, J. T. ..... *Tishomingo*

KAY

ARMSTRONG, W. O. ..... *Ponca City*
ARRENDELL, C. W. ..... *Ponca City*
BEATTY, J. H. ..... *Tonkawa*
BECKER, L. H. ..... *Blackwell*
CLIFT, MERL ..... *Blackwell*
CURRY, JOHN R. ..... *Blackwell*
GARDNER, C. C. ..... *Ponca City*
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GIBSON, R. B. ..... *Ponca City*
GORDON, D. M. ..... *Ponca City*
GOWEY, H. O. ..... *Newkirk*
HARMS, EDWIN M. ..... *Blackwell*
HENRY, J. WORRALL ..... *Braman*
HOWE, J. H. ..... *Ponca City*
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KREGER, G. S. ..... *Tonkawa*
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MILLER, D. W. ..... *Blackwell*
MOORE, G. C. ..... *Ponca City*
MORGAN, L. S. ..... *Ponca City*
NEAL, L. G. ..... *Ponca City*
NIEMANN, G. H. ..... *Ponca City*
NORTHCUTT, C. E. ..... *Ponca City*
NUCKOLS, A. S. ..... *Ponca City*
RISSER, A. S. ..... *Blackwell*
RISSER, PHILIP ..... *Blackwell*
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WALKER, I. D. ..... *Tonkawa*
WHITE, M. S. ..... *Blackwell*
WRIGHT, L. I. ..... *Blackwell*

YANDELL, HAYS R. ..... *Medical Arts Bldg., Tulsa*
YEARY, G. H. ..... *Newkirk*

KINGFISHER

DIXON, A. ..... *Hennessey*
GOSE, C. O. ..... *Hennessey*
HODGSON, C. M. ..... *Kingfisher*
LATTIMORE, F. C. ..... *Kingfisher*
MEREDITH, A. O. ..... *Kingfisher*
STURGEON, H. VIOLET ..... *Hennessey*
TAYLOR, JOHN R. ..... *Kingfisher*
TOWNSEND, B. I. ..... *Hennessey*

KIOWA

ADAMS, J. L. ..... *Hobart*
BONHAM, J. M. ..... *Hobart*
BRAUN, J. P. ..... *Hobart*
FINCH, J. WILLIAM ..... *Hobart*
FREEMAN, W. H. (honorary) ..... *Sentinel*
HATHAWAY, A. H. ..... *Mt. View*
MOORE, J. H. ..... *Hobart*
WALKER, F. E. ..... *Lone Wolf*
WATKINS, B. H. ..... *Hobart*

LEFLORE

BAKER, F. P. ..... *Talihina*
BEVILL, S. D. ..... *Poteau*
BOOTH, G. R. ..... *LeFlore*
DAVIS, CHAS. F. ..... *Talihina*
COLLINS, E. L. ..... *Panama*
DEAN, S. C. ..... *Howe*
DORROUGH, J. ..... *Monroe*
FAIR, E. N. ..... *Heavener*
HARVEY, JOHN ..... *Heavener*
HENRY, M. L. ..... *Heavener*
KELLEAM, E. A. ..... *Pine Valley*
MINOR, R. W. ..... *Spiro*
ROLLE, NEESON ..... *Poteau*
SHIPPEY, W. L. ..... *Poteau*
WOODSON, E. M. ..... *Poteau*
WOODSON, O. M. ..... *Poteau*
WRIGHT, R. L. ..... *Poteau*

LINCOLN

ADAMS, J. W. ..... *Chandler*
BAILEY, CARL H. ..... *Stroud*
BROWN, F. C. ..... *Sparks*
BURLESON, NED ..... *Prague*
DAVIS, W. B. ..... *Stroud*
ERWIN, PARA ..... *Wellston*
HURLBUT, E. F. ..... *Meeker*
JENKINS, H. B. ..... *Tryon*
MARSHALL, A. M. ..... *Chandler*
NICKELL, U. E. ..... *Davenport*
NORWOOD, F. H. ..... *Prague*
ROBERTSON, C. W. ..... *Chandler*
ROLLINS, J. S. ..... *Prague*

LOGAN

ANDERSON, ROY W. ..... *Guthrie*
BARKER, PAULINE ..... *Guthrie*
CORNWELL, N. H. ..... *Coyle*
FIRST, F. R. ..... *Crescent*
GARDNER, P. B. ..... *Guthrie*
GRAY, DAN ..... *Guthrie*
HAHN, L. A. ..... *Guthrie*
HILL, C. B. ..... *Guthrie*
LEHEW, JOHN LESLIE, JR. ..... *Guthrie*
MILLER, W. C. ..... *Guthrie*
PETTY, C. S. ..... *Guthrie*
PETTY, JAMES S. ..... *Guthrie*
RINGROSE, R. F. ..... *Guthrie*
RITZHAUPT, LOUIS H. ..... *Guthrie*
ROGERS, C. L. ..... *Marshall*
ROUTER, J. E. ..... *Guthrie*

MARSHALL

HOLLAND, JOHN LEE ..... *Madill*
YORK, JOSEPH FERRELL ..... *Madill*

MAYES

HERRINGTON, V. D. ..... *Pryor*
MORROW, B. L. ..... *Salina*
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WERLING, E. H. ..... *Pryor*
WHITAKER, W. J. ..... *Pryor*
WHITE, L. C. ..... *Adair*

McCLAIN

DAVIS, E. P. ..... *Purcell*
DAWSON, O. O. ..... *Wayne*
KOLB, I. N. ..... *Blanchard*
McCURDY, W. C., JR. ..... *Purcell*
McCURDY, W. C., SR. ..... *Purcell*
ROYSTER, R. L. ..... *Purcell*
SLOVER, BENJAMIN W. ..... *Blanchard*
WOOD, W. M. ..... *Purcell*

McCURTAIN

BARKER, N. L. ..... *Broken Bow*
CLARKSON, A. W. ..... *Valliant*
McBRAYER, W. H. ..... *Haworth*
McCASKILL, W. B. ..... *Idabel*
MORELAND, J. T. ..... *Idabel*
MORELAND, W. A. ..... *Idabel*
OLIVER, R. B. ..... *Idabel*
SHERRILL, R. H. ..... *Broken Bow*
SIZEMORE, PAUL ..... *Broken Bow*
WILLIAMS, R. D. ..... *Idabel*
WILLIAMS, W. W. ..... *Idabel*

McINTOSH

JACOBS, LUSTER I. ..... *Hanna*
LITTLE, DANIEL E. ..... *Eufaula*
PUGH, ROBERT E. ..... *Checotah*
STONER, RAYMOND W. ..... *Checotah*
TOLLESON, WILLIAM A. ..... *Eufaula*
WOOD, JAMES L. ..... *Eufaula*

MURRAY

ANNADOWN, P. V. ..... *Sulphur*
BALL, ERNEST ..... *Sulphur*
DeLAY, W. D. ..... *Sulphur*
PARKER, WARREN E. ..... *Davis*
POWELL, W. H. ..... *Sulphur*
ROSE, ERNEST ..... *Sulphur*
SADLER, F. E. ..... *Sulphur*
THOMAS, O. D. ..... *Sulphur*

MUSKOGEE

BALLANTINE, H. T. ..... *Muskogee*
BRUTON, L. D. ..... *Muskogee*
COACHMAN, E. H. ..... *Muskogee*
DIVINE, D. G. ..... *Wagoner*
DORWART, F. G. ..... *Muskogee*
DOYLE, W. H. ..... *Muskogee*
EARNEST, A. N. ..... *Muskogee*
EWING, FINIS W. ..... *Muskogee*
FITE, E. H. ..... *Muskogee*
FITE, W. P. ..... *Muskogee*
FULLENWIDER, C. M. ..... *Muskogee*
HOLCOMB, R. N. ..... *Camp Barkeley, Abilene, Texas*
JOBLIN, W. R. ..... *Porter*
KLASS, O. C. ..... *Muskogee*
KUPKA, JOHN F. ..... *Haskell*
McALISTER, L. S. ..... *Muskogee*
McINNIS, J. T. ..... *Muskogee*
MILLER, D. EVELYN ..... *Muskogee*
MOBLEY, A. L. ..... 323 *S. Dartmouth, Albuquerque, N. M.*
MOLLICA, STEPHEN G. ..... *Muskogee*
NEELY, SHADE D. ..... *Muskogee*
OLDHAM, I. B. ..... *Muskogee*
OLDHAM, I. B., JR. ..... *Muskogee*
SAUNDERS, H. U. ..... *Muskogee*
SCOTT, H. A. ..... *Muskogee*
THOMPSON, M. K. ..... *Muskogee*
WALKER, JOHN H. ..... *Muskogee*
WARTERFIELD, F. E. ..... *Muskogee*
WEAVER, W. N. ..... 1804 10*th St., Brownwood, Texas*
WHITE, CHARLES ED ..... *Muskogee*
WHITE, J. HUTCHINGS ..... *Muskogee*
WOLFE, I. C. ..... *Camp Barkeley, Abilene, Texas*
WOODBURN, J. TINDER ..... *Muskogee*

NOBLE

COLDIRON, D. F. ..... *Perry*
COOKE, C. H. ..... *Perry*
EVANS, A. M. ..... *Perry*

FRANCIS, J. W. ..... *Perry*
HEISS, J. E. ..... *Perry*
RENFRO, T. F. ..... *Billings*
WIGNER, R. H. ..... *Marland*

OKFUSKEE

BLOSS, C. M., JR. ..... *Camp Grant, Rockford, Ill.*
BOMBARGER, C. C. ..... *Paden*
BRICE, M. O. ..... *Okemah*
COCHRAN, C. M. ..... *Okemah*
JENKINS, W. P. ..... *Okemah*
KORNBLEE, A. T. ..... *Weleetka*
LUCAS, A. C. ..... *Castle*
MELTON, A. S. ..... *Okemah*
PEMBERTON, J. M. ..... *Okemah*
PRESTON, J. R. ..... *Weleetka*
SPICKARD, L. J. ..... *Okemah*

OKLAHOMA

ADAMS, ROBERT H. ..... *Ramsey Tower*
AKIN, ROBERT H. ..... 400 *N. W. 10th St.*
ALFORD, J. M. ..... *Medical Arts Bldg.*
ALLEN, E. P. ..... 1200 *N. Walker*
ALLEN, GEORGE T. ..... 1200 *N. Walker*
ANDREWS, LEILA E. ..... 1200 *N. Walker*
APPLETON, MEREDITH M. ..... 400 *N. W. 10th St.*
ARRINGTON, C. T. ..... 215 *Cotton Exchange Bldg.*
BAILEY, F. M. ..... *Quemado, N. M.*
BAILEY, W. H. ..... *Station Hospital, Fort Sill*
BALYEAT, RAY M. ..... 1200 *N. Walker*
BARB, T. J. ..... 240 *W. Commerce*
BARKER, C. E. ..... 1200 *N. Walker*
BARRY, GEORGE N. ..... *Medical Arts Bldg.*
BATCHELOR, JOHN J. ..... *Medical Arts Bldg.*
BATTENFIELD, JOHN Y. ..... *State Health Dept.*
BAUM, E. ELDON ..... 404 *Perrine Bldg.*
BELL, AUSTIN H. ..... 301 *W. 12th St.*
BERRY, CHARLES N. ..... *Medical Arts Bldg.*
BINKLEY, J. G. ..... *Medical Arts Bldg.*
BIRD, JESSE ..... 2501 *S. Agnew*
BIRGE, JACK P. ..... *Ramsey Tower*
BOATRIGHT, LLOYD C. ..... *Perrine Bldg.*
BOGGS, NATHAN ..... *Perrine Bldg.*
BOLEND, REX ..... *Camp Barkeley, Abilene, Texas*
BONDURANT, C. P. ..... *Medical Arts Bldg.*
BONHAM, WILLIAM L. ..... *Medical Arts Bldg.*
BORDER, CLINTON L. ..... *Amer. Nat'l Bldg.*
BORECKY, GEORGE L. ..... *Ramsey Tower*
BRADLEY, H. C. ..... *Perrine Bldg.*
BRANHAM, D. W. ..... *Medical Arts Bldg.*
BREWER, A. M. ..... *Perrine Bldg.*
BROWN, GERSTER W. ..... *Medical Arts Bldg.*
BRUNDAGE, C. L. ..... 1200 *N. Walker*
BURTON, JOHN F ..... 1200 *N. Walker*
BUTLER, H. W. ..... 1200 *N. Walker*
CAILEY, LEO F. ..... *Medical Arts Bldg.*
CAMPBELL, COYNE H. ..... *4th and Walnut*
CATES, ALBERT M. (honorary) ..... 2733 *N. W. 20th St.*
CAVINESS, J. J. ..... *Medical Arts Bldg.*
CHAFFIN, ZALE ..... *Municipal Bldg.*
CHARNEY, L. H. ..... *Medical Arts Bldg.*
CLARK, ANSON L. ..... *Medical Arts Bldg.*
CLARK, JOHN V. ..... 1706 *S. E. 29th St.*
CLARK, LeMON ..... *Medical Arts Bldg.*
CLARK, RALPH O. ..... 1706 *S. E. 29th St.*
CLYMER, C. E. ..... *Medical Arts Bldg.*
COLEY, A. J. (honorary) ..... *Hightower Bldg.*
COLLINS, H. DALE ..... *Medical Arts Bldg.*
COLONNA, PAUL C. ..... 800 *N. E. 13th St.*
COOPER, F. MAXEY ..... *Medical Arts Bldg.*
COSTON, TULLOS O. ..... *Medical Arts Bldg.*
CUNNINGHAM, JOHN A. ..... 209 *N. W. 13th St.*
DAILY, H. J. ..... *Medical Arts Bldg.*
DANIELS, HARRY A. ..... 610 *N. W. 9th St.*
DeMAND, F. A. ..... 1200 *N. Walker*
DERSCH, WALTER H. ..... *Medical Arts Bldg.*
DEUPREE, HARRY L. ..... *Medical Arts Bldg.*
DICKSON, GREEN K. ..... 1200 *N. Walker*
DILL, FRANCIS E. ..... *Medical Arts Bldg.*
DOUDNA, HUBERT E. ..... 800 *E. 13th St.*
DOWDY, THOMAS W. ..... *Medical Arts Bldg.*
EARLY, RALPH O. ..... *Medical Arts Bldg.*
EASTLAND, WILLIAM E. ..... *Medical Arts Bldg.*
ELEY, N. PRICE ..... 400 *W. 10th St.*
ELLIS, STEPHEN S. ..... 610 *N. W. 9th St.*
EMENHISER, LEE K. 123 *Harrison, San Antonio, Tex.*
EPLEY, C. O. ..... 1200 *N. Walker*
ERWIN, FRANTZ B. ..... *Medical Arts Bldg.*
ESKRIDGE, J. B., JR. ..... 1200 *N. Walker*
FAGIN, HERMAN ..... *Nat'l Aid Life Bldg.*
FARIS, BRUNEL D. ..... *Medical Arts Bldg.*
FELTS, GEORGE R. ..... 1200 *N. Walker*
FERGUSON, E. GORDON ..... *Medical Arts Bldg.*
FERGUSON, E. S. ..... *Medical Arts Bldg.*
FISHMAN, C. J. ..... 132 *N. W. 4th St.*
FLESHER, THOMAS H. ..... *Edmond*
FOERSTER, HERVEY A. *Camp Wallace, Galveston, Tex.*
FORD, HARRY C. ..... *Medical Arts Bldg.*
FRIERSON, S. E. ..... *Medical Arts Bldg.*
FULTON, C. C. ..... *Medical Arts Bldg.*
FULTON, GEORGE ..... *Amer. Nat'l Bldg.*
GALBRAITH, HUGH M. ..... *4th and Walnut*
GALLAGHER, C. A. ..... 610 *W. 9th St.*
GARRISON, GEORGE H. ..... 1200 *N. Walker*
GEE, O. J. ..... *Medical Arts Bldg.*
GIBBS, ALLEN G. ..... *Ramsey Tower*
GILLIS, EUGENE A. ..... *State Health Dept.*
GLOMSET, JOHN L. ..... 1200 *N. Walker*
GOLDFAIN, E. ..... *Medical Arts Bldg.*
GOODWIN, R. Q. ..... *Medical Arts Bldg.*
GRAHAM, A. T. ..... 26 *S. W. 25th St.*
HALL, CLARK H. ..... *Medical Arts Bldg.*
HAMMONDS, O. O. ..... 623 *N. E. 18th St.*
HARBISON, FRANK ..... 510 *N. W. 12th St.*
HARBISON, J. E. ..... 510 *N. W. 12th St.*
HARRIS, HENRY W. ..... 1200 *N. Walker*
HASKETT, PAUL E. ..... *Hales Bldg.*
HASSLER, GRACE C. ..... *Medical Arts Bldg.*
HAYES, BASIL A. ..... 625 *N. W. 10th St.*
HAZEL, ONIS G. ..... 1200 *N. Walker*
HEATLEY, JOHN E. ..... *Medical Arts Bldg.*
HERRMANN, JESS D. ..... *Medical Arts Bldg.*
HETHERINGTON, A. J. ..... 2014 *Gatewood*
HICKS, FRED B. ..... *Medical Arts Bldg.*
HIRSHFIELD, A. C. ..... *Medical Arts Bldg.*
HOLLIDAY, J. R. ..... *Medical Arts Bldg.*
HOOD, F. REDDING ..... 1200 *N. Walker*
HOWARD, R. M. ..... 1200 *N. Walker*
HUGGINS, J. R. ..... 2225 *Exchange Ave.*
HULL, WAYNE M. ..... 1200 *N. Walker*
HUNTER, GEORGE ..... 2248 *N. W. 17th St.*
HYROOP, GILBERT L. ..... *Medical Arts Bldg.*
ISHMAEL, WILLIAM K. ..... 605 *N. W. 10th St.*
JACKSON, A. R. ..... 2528½ *S. Robinson*
JACOBS, MINARD F. ..... *Medical Arts Bldg.*
JANCO, LEON ..... 10 *W. Park*
JETER, HUGH ..... 1200 *N. Walker*
JONES, HUGH ..... *Medical Arts Bldg.*
KELLER, W. F. ..... *Medical Arts Bldg.*
KELSO, JOSEPH W. ..... *Medical Arts Bldg.*
KELTZ, BERT F. ..... *Medical Arts Bldg.*
KERNODLE, STRATTON E. ..... *First National Bldg.*
KIMBALL, GEORGE H. ..... *Medical Arts Bldg.*
KUHN, JOHN F., JR. ..... *Medical Arts Bldg.*
KUHN, JOHN F. ..... *Medical Arts Bldg.*
KURZNER, MEYER ..... 1200 *N. Walker*
LACHMANN, ERNST ..... 800 *N. E. 13th St.*
LAIN, E. S. ..... *Medical Arts Bldg.*
LAMB, JOHN H. ..... *Medical Arts Bldg.*
LAMBKE, PHIL M. ..... 105 *N. W. 23rd St.*
LaMOTTE, GEORGE A. ..... *Colcord Bldg.*
LANGSTON, WANN ..... *Medical Arts Bldg.*
LEMON, CECIL W. ..... *Medical Arts Bldg.*
LENEY, FANNIE LOU ..... 400 *N. W. 10th St.*
LEONARD, C. E. 531 *Fullerton Parkway, Chicago, Ill.*
LEWIS, A. R. ..... *Hightower Bldg.*
LINDSTROM, W. C. ..... *Camp Barkeley, Abilene, Texas*
LINGENFELTER, F. M. ..... 1200 *N. Walker*
LITTLE, JOHN R. ..... *Ramsey Tower*
LONG, LeROY D. ..... *Medical Arts Bldg.*

LONG, WENDELL ..... *Medical Arts Bldg.*
LOWRY, DICK ..... 1200 *N. Walker*
LOWRY, TOM ..... 1200 *N. Walker*
LOY, C. F. ..... *Perrine Bldg.*
LUTON, JAMES P ..... *Medical Arts Bldg.*
LYON, JAMES I. ..... *Edmond*
MACDONALD, J. C. ..... 301 *N. W. 12th St.*
MARGO, ELIAS ..... 605 *N. W. 10th St.*
MARTIN, J. T. ..... 1200 *N. Walker*
MASTERSON, MAUDE M. ..... *Medical Arts Bldg.*
MATTHEWS, SANFORD ..... 400 *N. W. 10th St.*
McBRIDE, EARL D. ..... 605 *N. W. 10th St.*
McCLURE, WILLIAM C. ..... 1200 *N. Walker*
McGEE, J. P. ..... 1200 *N. Walker*
McHENRY, L. C. ..... *Medical Arts Bldg.*
McKINNEY, MILAM F. ..... *Medical Arts Bldg.*
McLAUCHLIN, J. R. ..... *Plaza Court Bldg.*
McNEILL, P. M. ..... *Medical Arts Bldg.*
MECHLING, GEORGE S. ..... 1200 *N. Walker*
MESSENBAUGH, J. F. ..... *Colcord Bldg.*
MESSINGER, R. P. ..... 807 *N. W. 23rd St.*
MILLS, R. C. ..... *Hightower Bldg.*
MOOR, H. D. ..... 800 *N. E. 13th St.*
MOORE, B. H. ..... *Perrine Bldg.*
MOORE, C. D. ..... *Perrine Bldg.*
MOORE, ELLIS ..... *Medical Arts Bldg.*
MOORMAN, FLOYD ..... 1200 *N. Walker*
MOORMAN, L. J. ..... 1200 *N. Walker*
MORGAN, C. A. ..... *First National Bldg.*
MORLEDGE, WALKER ..... 1200 *N. Walker*
MORRISON, H. C. ..... 807 *N. W. 23rd St.*
MULVEY, BERT E. ..... *Medical Arts Bldg.*
MURDOCH, RAYMOND L. ..... *Medical Arts Bldg.*
MUSICK, E. R. ..... *Medical Arts Bldg.*
MUSICK, V. H. ..... *Medical Arts Bldg.*
MUSSIL, W. M. ..... *Medical Arts Bldg.*
MYERS, RALPH E. ..... 1200 *N. Walker*
NAGLE, PATRICK S. ..... 1021 *N. Lee*
NEEL, ROY L. ..... *Medical Arts Bldg.*
NEFF, EVERETT B. ..... 1200 *N. Walker*
NICHOLSON, BEN H. ..... 301 *N. W. 12th St.*
NOELL, ROBERT L. ..... *Medical Arts Bldg.*
O'DONOGHUE, D. H. ..... *Medical Arts Bldg.*
O'LEARY, CHARLES M. ..... *Medical Arts Bldg.*
PATTERSON, ROBERT U. ..... 801 *N. E. 13th St.*
PAULUS, D. D. ..... 301 *N. W. 12th St.*
PAYTE, J. I. ..... 2429 *Aurora Court*
PENICK, GRIDER ..... *Colcord Bldg.*
PETWAY, AILEEN ..... 1200 *N. Walker*
PHELPS, A. S. ..... *Medical Arts Bldg.*
PINE, JOHN S. ..... *Medical Arts Bldg.*
POOLE, WARREN B. ..... *Medical Arts Bldg.*
POSTELLE, J. M. ..... *Medical Arts Bldg.*
POUNDERS, CARROLL M. ..... 1200 *N. Walker*
PRICE, JOEL S. ..... 1200 *N. Walker*
RANDEL, HARVEY O. ..... 119 *N. Broadway*
RECK, JOHN A. ..... *Colcord Bldg.*
RECORDS, J. W. ..... 2926 *Lebanon, El Paso, Texas*
REED, HORACE ..... 1200 *N. Walker*
REED, JAMES R. ..... *Medical Arts Bldg.*
REICHMANN, RUTH S. ..... 124 *N. W. 15th St.*
RIELY, LEA A. ..... *Medical Arts Bldg.*
RICKS, J. R. ..... *Camp Barkeley, Abilene, Texas*
RILEY, J. W. ..... 119 *N. W. 5th St.*
ROBINSON, J. H. ..... 301 *N. W. 12th St.*
RODDY, JOHN A. ..... *Ramsey Tower*
ROGERS, GERALD ..... 1200 *N. Walker*
ROSENBERGER, F. E. ..... *Perrine Bldg.*
ROUNTREE, C. R. ..... 1200 *N. Walker*
RUCKS, W. W., JR. ..... 301 *N. W. 12th St.*
RUCKS, W. W., SR. ..... 301 *N. W. 12th St.*
SADLER, LeROY H. ..... 1200 *N. Walker*
SALOMON, A. L. ..... 1200 *N. Walker*
SANGER, F. M. ..... *Key Bldg.*
SANGER, WINNIE M. ..... *Key Bldg.*
SEBA, CHESTER R. ..... 1200 *N. Walker*
SERWER, MILTON J. ..... 1200 *N. Walker*
SHACKELFORD, JOHN W. ..... *State Health Dept.*
SHELTON, J. W. ..... *Hightower Bldg.*
SHEPPARD, MARY S. ..... 1200 *N. Walker*
SHORBE, HOWARD B. ..... *Station Hospital, Fort Sill*
SMITH, CHARLES A. ..... *4th and Walnut*
SMITH, DELBERT G. ..... *First National Bldg.*
SMITH, EDWARD N. ..... 800 *N. E. 13th St.*
SMITH, RALPH A. ..... 443½ *N. W. 23rd St.*
SNOW, J. B. ..... 1200 *N. Walker*
STANBRO, GREGORY E. ..... *Medical Arts Bldg.*
STARRY, L. J. ..... 1200 *N. Walker*
STONE, S. N. ..... *Edmond*
STOUT, MARVIN E. ..... 209 *N. W. 13th St.*
STRADER, S. ERNEST ..... *Hightower Bldg.*
STRECKER, WILLIAM E. ..... 1200 *N. Walker*
SULLIVAN, ELIJAH S. ..... *Medical Arts Bldg.*
TABOR, GEORGE R. (honorary) ..... *First National Bldg.*
TAYLOR, CHARLES B. ..... *Medical Arts Bldg.*
TAYLOR, JIM M. ..... *Medical Arts Bldg.*
TAYLOR, WILLIAM M. ..... 1200 *N. Walker*
THOMPSON, WAYMAN J. ..... 1200 *N. Walker*
TOOL, DONOVAN ..... *Edmond*
TOWNSEND, CARY W. ..... *Medical Arts Bldg.*
TRENT, ROBERT I. ..... *Medical Arts Bldg.*
TURNER, HENRY H. ..... 1200 *N. Walker*
VAHLBERG, E. R. ..... *Perrine Bldg.*
VON WEDEL, CURT ..... 610 *N. W. 10th St.*
WAILS, T. G. ..... *Medical Arts Bldg.*
WAINWRIGHT, TOM L. ..... *Medical Arts Bldg.*
WARMACK, J. C. ..... 200 *N. W. 16th St.*
WATSON, O. ALTON ..... 1200 *N. Walker*
WATSON, R. D. ..... *Britton*
WEIR, MARSHALL W. ..... *Ramsey Tower*
WELLS, EVA ..... *Medical Arts Bldg.*
WELLS, LOIS LYON ..... 800 *N. E. 13th St.*
WELLS, W. W. ..... *Medical Arts Bldg.*
WEST, W. K. ..... 1200 *N. Walker*
WESTFALL, L. M. ..... *Medical Arts Bldg.*
WHITE, ARTHUR W. ..... *Medical Arts Bldg.*
WHITE, OSCAR R. ..... 1200 *N. Walker*
WHITE, PHIL E. ..... *Perrine Bldg.*
WILDMAN, S. F. ..... *Medical Arts Bldg.*
WILKINS, HARRY ..... *Medical Arts Bldg.*
WILLIAMS, LEONARD C. ..... 1200 *N. Walker*
WILLIAMSON, SAM H. ..... *Jones*
WILLIAMSON, W. H. ..... 128 *N. W. 14th St.*
WILLIE, JAMES A. ..... *Medical Arts Bldg.*
WILSON, KENNETH J. ..... *Medical Arts Bldg.*
WITTEN, HAROLD B. ..... *Harrah*
WOLFF, JOHN POWERS ..... 1200 *N. Walker*
WOODWARD, NEIL W. ..... 1200 *N. Walker*
WRIGHT, HARPER ..... 318 *S. W. 25th St.*
YOUNG, A. M., 3rd ..... *Medical Arts Bldg.*
YOUNG, A. M., JR. (honorary) ..... *Medical Arts Bldg.*

OKMULGEE

ALEXANDER, LIN ..... *Okmulgee*
ALEXANDER, ROBERT L. ..... *Okmulgee*
BOLLINGER, I. W. ..... *Henryetta*
BOSWELL, H. D. ..... *Henryetta*
CARLOSS, T. C. ..... *Morris*
CARNELL, M. D. ..... *Okmulgee*
COTTERAL, J. R. ..... *Henryetta*
EDWARDS, J. G. ..... *Okmulgee*
HOLMES, A. R. ..... *Henryetta*
HUDSON, W. S. ..... *Okmulgee*
KILPATRICK, G. A. ..... *Henryetta*
LESLIE, S. B. ..... *Okmulgee*
MABEN, CHARLES S. ..... *Okmulgee*
MATHENEY, J. C. ..... *Okmulgee*
McKINNEY, G. Y. ..... *Henryetta*
MING, C. M. ..... *Okmulgee*
MITCHENER, W. C. ..... *Okmulgee*
MORRIS, CHARLES H. ..... 1105 *Durham*
Brownwood, Texas
RAINS, HUGH L. ..... *Okmulgee*
RODDA, E. D. ..... *Okmulgee*
SIMPSON, N. N. ..... *Henryetta*
SMITH, C. E. ..... *Quarters 31, Fort Logan, Colo.*
TRACEWELL, GEORGE L. ..... *Okmulgee*

VERNON, W. C. ..... *Okmulgee*
WATSON, F. S. ..... *Okmulgee*

OSAGE

AARON, WILLIAM H. ..... *Pawhuska*
BAYLOR, RICHARD A. ..... *Fairfax*
DALY, JOHN F. ..... *Camp Barkeley, Abilene, Texas*
DOZIER, BARCLAY E. ..... *Shidler*
GOVAN, THOMAS P. ..... *Pawhuska*
GUILD, CARL H. ..... *Shidler*
HEMPHILL, GEORGE K. ..... *Pawhuska*
HEMPHILL, PAUL H. *Camp Barkeley, Abilene, Texas*
KARASEK, MATTHEW ..... *Shidler*
KEYES, E. C. ..... *Shidler*
KIMBALL, M. C. ..... *Webb City*
LIPE, EVERETT N. ..... *Fairfax*
LOGAN, C. K. ..... *Hominy*
RAGAN, TILLMAN A. ..... *Fairfax*
SMITH, RAYMOND O. ..... *Hominy*
SULLIVAN, B. F. ..... *Barnsdall*
WALKER, G. I. ..... *Hominy*
WALKER, ROSCOE ..... *Pawhuska*
WEIRICH, COLIN REID ..... *Pawhuska*
WILLIAMS, CLAUDE W. ..... 300 *N. E. 15th St., O. C.*
WORTEN, DIVONIS ..... *Pawhuska*

OTTAWA

AISENSTADT, E. ALBERT *Station Hosp., Ft. Sill, Ok.*
BARRY, J. R. ..... *Picher*
BOWERS, FRANKLIN T. ..... *Picher*
CANNON, R. F. ..... *Miami*
CHESNUT, W. G. ..... *Miami*
CONNELL, M. A. ..... *Picher*
CRAIG, J. W. ..... *Miami*
CUNNINGHAM, P. J. ..... *Miami*
DeARMAN, M. M. ..... *Miami*
DeTAR, GEORGE A. ..... *Miami*
DOLAN, WILLIAM M. ..... *Picher*
HAMPTON, J. B. ..... *Commerce*
HETHERINGTON, L. P. ..... *Miami*
HUGHES, A. R. ..... *Miami*
JACOBY, J. SHERWOOD ..... *Commerce*
KERR, WALTER C. H. ..... *Picher*
McNAUGHTON, G. P. ..... *Miami*
MILLER, H. K. ..... *Fairland*
MURRY, A. V. ..... *Picher*
RALSTON, BENJAMIN W. ..... *Commerce*
RITCHEY, H. C. ..... *Picher*
RUSSELL, RICHARD ..... *Picher*
SANGER, WALTER B. ..... *Picher*
SAYLES, W. JACKSON ..... *Miami*
SHELTON, B. WRIGHT ..... *Miami*
SIEVERS, CHARLES M. ..... *Picher*
STAPLES, J. H. L. ..... *Afton*
WORMINGTON, F. L. ..... *Miami*

PAWNEE

BROWNING, R. L. ..... *Pawnee*
JONES, R. E. ..... *Pawnee*
LeHEW, J. L. ..... *Pawnee*
ROBINSON, E. T. ..... *Cleveland*
SADDORIS, M. L. ..... *Cleveland*
SPAULDING, H. B. ..... *Ralston*

PAYNE

*BEACH, CALBERT H. (honorary) ..... *Glencoe*
CLEVERDON, L. A. ..... *Stillwater*
DAVIDSON, W. N. ..... *Cushing*
DAVIS, BENJAMIN ..... *Cushing*
FRIEDEMANN, PAUL W. ..... *Stillwater*
FRY, POWELL E. ..... *Stillwater*
HARRIS, EDWARD M. (honorary) ..... *Cushing*
HOLBROOK, R. W. ..... *Perkins*
LEATHEROCK, R. E. ..... *Cushing*
MARTIN, E. O. ..... *Cushing*
MARTIN, JAMES D. ..... *Cushing*
MARTIN, JOHN F. ..... *Stillwater*
MARTIN, JOHN W. ..... *Cushing*
MITCHELL, L. A. ..... *Stillwater*
OEHLSCHLAGER, F. KEITH ..... *Yale*
*Died May 15, 1941.

PETER, MAURICE L. ..... *Stillwater*
PUCKETT, HOWARD L. ..... *Stillwater*
RICHARDSON, P. M. ..... *Cushing*
ROBERTS, R. E. ..... *Stillwater*
SEXTON, C. E. (honorary) ..... *Stillwater*
SMITH, A. B. ..... *Stillwater*
SMITH, HASKELL ..... *Stillwater*
STEVENSON, DORA WILEY ..... *Stillwater*
THOMPSON, W. C. ..... *Stillwater*
WAGGONER, ROY E. ..... *Stillwater*
WILHITE, L. L. ..... *Perkins*

PITTSBURG

BAUM, FRANK J. ..... *McAlester*
BARTHELD, FLOYD T. ..... *McAlester*
BUNN, A. D. ..... *Savanna*
CALLAHAN, J. S. ..... *Wilburton*
DORROUGH, JOE ..... *McAlester*
ELLIS, H. A. ..... *Pittsburg*
GEORGE, L. J. ..... *Stuart*
GREENBERGER, EDWARD D. ..... *McAlester*
HARRIS, J. M. ..... *Wilburton*
KAEISER, WILLIAM H. ..... *McAlester*
KILPATRICK, GEORGE A. ..... *McAlester*
KLOTZ, WILLIAM F. ..... *McAlester*
KUYRKENDALL, L. C. ..... *McAlester*
LIVELY, C. E. ..... *McAlester*
McCARLEY, T. H. ..... *McAlester*
MILLER, FRANK A. ..... *Hartshorne*
MUNN, JESSE A. ..... *McAlester*
NORRIS, T. T. ..... *Krebs*
PARK, JOHN F. ..... *McAlester*
PEARCE, CHARLES M. ..... *McAlester*
PEMBERTON, R. K. ..... *McAlester*
RAMSEY, W. G. ..... *McAlester*
RICE, O. W. ..... *McAlester*
SAMES, W. W. ..... *Hartshorne*
SHULLER, E. H. ..... *McAlester*
STOUGH, A. R. ..... *McAlester*
WAIT, WILLIAM C. ..... *McAlester*
WELCH, A. H. (honorary) ..... *McAlester*
WILLIAMS, C. O. ..... *McAlester*
WILLOUR, L. S. ..... *McAlester*
WILSON, HERBERT A. ..... *McAlester*
WILSON, McCLELLAND (honorary) ..... *McAlester*

PONTOTOC

BIGLER, IVAN E. ..... *Ada*
BRECO, J. G. ..... *Ada*
BRYDIA, CATHERINE ..... *Ada*
CANADA, ERNEST A. ..... *Ada*
CHEATWOOD, WILLIAM R. ..... *Ada*
COWLING, ROBERT E. ..... *Ada*
CUMMINGS, I. L. ..... *Ada*
DEAN, W. F. ..... *Ada*
GULLATT, ENNIS M. ..... *Ada*
LANE, WILSON H. ..... *Ada*
LEWIS, E. F. ..... *Ada*
LEWIS, M. L. ..... *Ada*
McBRIDE, OLLIE ..... *Ada*
McKEEL, SAM A. ..... *Ada*
MILLER, O. H. ..... *Ada*
MOREY, J. B. ..... *Ada*
MUNTZ, E. R. ..... *Ada*
NEEDHAM, C. F. ..... *Ada*
PETERSON, WILLIAM G. ..... *Ada*
ROSS, S. P. ..... *Ada*
RUTLEDGE, J. A. ..... *Ada*
SUGG, ALFRED R. ..... *Ada*
WEBSTER, M. M. ..... *Ada*
WELBORN, O. E. ..... *Ada*

POTTAWATOMIE

ALLEY, RALPH M. ..... *Shawnee*
ANDERSON, R. M. ..... *Shawnee*
BAKER, M. A. ..... *Shawnee*
BALL, W. A. ..... *Wanette*
BAXTER, GEORGE S. ..... *Shawnee*
BROWN, R. A. ..... *R.F.D. Prague*
BYRUM, J. M. ..... *Shawnee*
CAMPBELL, H. G. ..... *St. Louis*

CARSON, F. L. ..... *Shawnee*
CARSON, JOHN ..... *Shawnee*
CORDELL, U. S. ..... *McComb*
CULBERTSON, R. R. ..... *Maud*
CULLUM, J. E. (honorary) ..... *Marshfield, Mo.*
FORTSON, J. L. ..... *Tecumseh*
GALLAHER, CLINTON ..... *Shawnee*
GALLAHER, PAUL C. ..... *Shawnee*
GALLAHER, W. M. ..... *Shawnee*
GILLICK, DAVID W. ..... *208 Federal Bldg., Okla. City*
HASSLER, F. R. ..... *Shawnee*
HAYGOOD, CHARLES W. ..... *Shawnee*
HUGHES, HORTON E. ..... *Shawnee*
HUGHES, J. E. ..... *Shawnee*
KAYLER, R. C. ..... *McLoud*
KEEN, F. M. ..... *Shawnee*
MATTHEWS, W. F. ..... *Tecumseh*
McFARLING, A. C. ..... *Shawnee*
McFARLING, JOHN ..... *Shawnee*
MULLINS, WILLIAM B. ..... *Shawnee*
NEWLIN, FRANCIS P. ..... *Shawnee*
PARAMORE, C. F. ..... *Shawnee*
RICE, E. EUGENE ..... *Shawnee*
ROWLAND, T. D. ..... *Shawnee*
WALKER, J. A. ..... *Shawnee*
WILLIAMS, ALPHA McADAMS ..... *Shawnee*
YOUNG, C. C. ..... *Shawnee*

PUSHMATAHA

CONNALLY, D. W. ..... *Antlers*
HUCKABY, B. M. ..... *Antlers*
LAWSON, JOHN S. ..... *Clayton*
PATTERSON, E. S. ..... *Antlers*
RICE, P. B. ..... *Antlers*

ROGERS

ANDERSON, F. A. ..... *Claremore*
ANDERSON, P. S. ..... *Claremore*
ANDERSON, W. D. ..... *Claremore*
BESON, CLYDE W. ..... *Claremore*
BIGLER, E. E. ..... *Claremore*
CALDWELL, C. L. ..... *Chelsea*
COLLINS, B. F. ..... *Claremore*
HOWARD, W. A. ..... *Chelsea*
JENNINGS, K. D. ..... *Chelsea*
MELINDER, ROY J. ..... *Camp Barkeley, Abilene, Texas*
MELOY, R. C. ..... *Claremore*
NELSON, D. C. ..... *Navajo Medical Center Ft. Defiance, Ariz.*

SEMINOLE

CHAMBERS, CLAUDE S. ..... *Seminole*
DAVIS, JOHN ..... *Seminole*
GIESEN, A. F. ..... *Konawa*
GRIMES, JOHN P. ..... *Wewoka*
HARBER, J. N. (honorary) ..... *Seminole*
HARTSHORNE, WILLIAM O. ..... *Cromwell*
KNIGHT, CLAUDE B. ..... *Wewoka*
LYTLE, WILLIAM R. ..... *Seminole*
McGOVERN, J. D. ..... *Wewoka*
MOSHER, D. D. ..... *Seminole*
PACE, L. R. ..... *Seminole*
REEDER, H. M. ..... *Konawa*
RIPPY, O. M. ..... *Seminole*
SHANHOLTZ, MACK I. ..... *Wewoka*
STEPHENS, A. B. ..... *Seminole*
VAN SANDT, GUY B. ..... *Wewoka*
VAN SANDT, MAX M. ..... *Wewoka*
WALKER, A. A. ..... *Wewoka*
WILLIAMS, J. CLAY ..... *Wewoka*
WRIGHT, HERBERT L. ..... *Sasakwa*

SEQUOYAH

MORROW, J. A. ..... *Sallisaw*

STEPHENS

COKER, JOHN K. ..... *Duncan*
GARRETT, S. S. ..... *Duncan*
IVY, WALLIS S. ..... *Duncan*
LINDLEY, E. C. ..... *Duncan*
McLAIN, W. Z. ..... *Marlow*
McMAHAN, A. M. ..... *Duncan*
PATTERSON, J. L. ..... *Duncan*
RICHARDSON, R. W. ..... *Duncan*
TALLEY, C. N. ..... *Marlow*
THOMASSON, E. B. ..... *Duncan*
WALKER, W. K. ..... *Marlow*
WATERS, CLAUDE B. ..... *Duncan*
WEEDN, A. J. ..... *Duncan*

TEXAS

BLACKMER, L. G. ..... *Hooker*
BLUE, JOHNNY A. ..... *Guymon*
HALL, HARRY B. ..... *Boise City*
HAYES, R. B. ..... *Guymon*
LEE, DANIEL S. ..... *Guymon*
NICHOLSON, JAMES L. ..... *Guymon*
OBERMILLER, R. G. ..... *Texhoma*
SMITH, MORRIS ..... *Guymon*
THURSTON, HARRY E. ..... *Texhoma*

TILLMAN

ALLEN, C. C. ..... *Frederick*
ARRINGTON, J. E. ..... *Frederick*
BACON, O. G. ..... *Frederick*
BOX, O. H., JR. ..... *Grandfield*
CHILDERS, J. E. ..... *Tipton*
COMP, G. A. ..... *Manitou*
FISHER, R. L. ..... *Frederick*
FOSHEE, W. C. ..... *Grandfield*
FUQUA, W. A. ..... *Grandfield*
OSBORN, J. D. ..... *Frederick*
SPURGEON, T. F. ..... *Frederick*

TULSA

ADAMS, R. M. ..... *501 N. Boulder*
AKINS, J. O. ..... *Medical Arts Bldg.*
ALLEN, V. K. ..... *Medical Arts Bldg.*
ARMSTRONG, O. C. ..... *Medical Arts Bldg.*
ATCHLEY, R. Q. ..... *Medical Arts Bldg.*
BEESLEY, W. W ..... *Medical Arts Bldg.*
BEST, RALPH L. ..... *Drumright*
BILLINGTON, J. JEFF ..... *Tulsa County Clinic*
BLACK, HAROLD J. ..... *Medical Arts Bldg.*
BOLTON, J. FRED ..... *Medical Arts Bldg.*
BRADFIELD, S. J. ..... *Medical Arts Bldg.*
BRADLEY, C. E. ..... *Medical Arts Bldg.*
BRANLEY, B. L. ..... *Medical Arts Bldg.*
BRASWELL, JAMES C. ..... *Medical Arts Bldg.*
BROGDEN, J. C. ..... *Medical Arts Bldg.*
BROOKSHIRE, J. E. (honorary) ..... *409 S. Boulder*
BROWNE, HENRY S. ..... *Medical Arts Bldg.*
BRYAN, W. J., JR. ..... *Medical Arts Bldg.*
CALHOUN, C. E. ..... *Sand Springs*
CALHOUN, W. H. ..... *Medical Arts Bldg.*
CAMERON, PAUL B. ..... *Springer Clinic*
CARNEY, A. B. ..... *915 S. Cincinnati*
CHALMERS, J. S. ..... *Sand Springs*
CHARBONNET, P. N. ..... *Medical Arts Bldg.*
CHILDS, D. B. ..... *1226 S. Boston Place*
CHILDS, H. C. ..... *1226 S. Boston Place*
CHILDS, J. W. ..... *1226 S. Boston Place*
CLINTON, FRED S. (honorary) ..... *230 E. Woodward Blvd.*
CLULOW, GEORGE H. ..... *1307 S. Main*
COHENOUR, E. L. ..... *Medical Arts Bldg.*
COOK, W. ALBERT ..... *Medical Arts Bldg.*
COULTER, T. B. ..... *Medical Arts Bldg.*
CRAWFORD, WILLIAM S. ..... *Nat'l Bank of Tulsa Bldg.*
CRONK, FRED Y. ..... *Medical Arts Bldg.*
DAILY, R. E. ..... *Bixby*
DAVIS, A. H. ..... *Medical Arts Bldg.*
DAVIS, GEORGE M. ..... *Bixby*
DEAN, W. A. ..... *Medical Arts Bldg.*
DENNY, E. RANKIN ..... *Medical Arts Bldg.*
DUNLAP, ROY W. ..... *Medical Arts Bldg.*
EADS, C. H. ..... *Medical Arts Bldg.*
EDWARDS, D. L. ..... *203 Philcade Bldg.*
EDWARDS, JOHN ..... *Medical Arts Bldg.*
EVANS, HUGH J. ..... *Medical Arts Bldg.*
FARRIS, H. LEE ..... *Medical Arts Bldg.*
FLACK, F. L. ..... *Nat'l Bank of Tulsa Bldg.*

FLANAGAN, O. A. ..... 912 *S. Boulder*
FORRY, W. W. ..... *Bixby*
FRANKLIN, S. E. ..... *Medical Arts Bldg.*
FULCHER, JOSEPH ..... *Medical Arts Bldg.*
GARRETT, D. L. ..... *Medical Arts Bldg.*
GILBERT, J. B. ..... *Nat'l Mutual Bldg.*
GLASS, FRED A. ..... *Medical Arts Bldg.*
GODDARD, R. K. ..... *Skiatook*
GOODMAN, SAMUEL ..... *Medical Arts Bldg.*
GORRELL, J. F. ..... *Medical Arts Bldg.*
GRAHAM, HUGH C. ..... 1307 *S. Main*
GREEN, HARRY ..... *Medical Arts Bldg.*
GROSSHART, PAUL ..... *Medical Arts Bldg.*
HALL, G. H. ..... 308 *Palace Bldg.*
HARALSON, C. H. ..... *Medical Arts Bldg.*
HARDMAN, T. J. ..... *Medical Arts Bldg.*
HARRIS, BUNN ..... *Jenks*
HART, MABEL M. ..... 2529 *S. Boston Place*
HART, M. O. ..... 1232 *S. Boulder*
HAYS, LUVERN ..... *Medical Arts Bldg.*
HENDERSON, F. W. ..... *Medical Arts Bldg.*
HENLEY, MARVIN D. ..... *Medical Arts Bldg.*
HENRY, G. H. ..... *Medical Arts Bldg.*
HOKE, C. C. ..... 207 *Philtower Bldg.*
HOOVER, W. D. ..... 201 *Philcade Bldg.*
HOTZ, CARL J. ..... *Springer Clinic*
HOUSER, M. A. ..... 628 *McBirney Bldg.*
HUBER, W. A. ..... *Medical Arts Bldg.*
HUDSON, DAVID V. ..... *Medical Arts Bldg.*
HUDSON, MARGARET G. ..... *Medical Arts Bldg.*
HUMPHREY, B. H. ..... *Sperry*
HUTCHISON, A. ..... *Bixby*
HYATT, E. G. ..... *Springer Clinic*
JOHNSON, CHARLES D. ..... 207 *Atlas Life Bldg.*
JOHNSON, E. O. ..... *Medical Arts Bldg.*
JOHNSON, R. R. ..... *Springer Clinic*
JONES, WILLIAM M. ..... 915 *S. Cincinnati*
KEMMERLY, H. P. ..... *Medical Arts Bldg.*
KRAMER, ALLEN C. ..... *Medical Arts Bldg.*
LARRABEE, W. S. ..... *Medical Arts Bldg.*
LAYTON, O. E. ..... *Collinsville*
LEE, J. K. ..... *Medical Arts Bldg.*
LeMASTER, D. W. ..... *Medical Arts Bldg.*
LHEVINE, MORRIS B. ..... *Medical Arts Bldg.*
LONEY, W. R. R. ..... *Medical Arts Bldg.*
LOWE, J. O. ..... 915 *S. Cincinnati*
LUSK, E. M. ..... 915 *S. Cincinnati*
LYNCH, THOMAS J. ..... 201 *Philcade Bldg.*
MacDONALD, D. M. ..... 1729 *S. Utica*
MacKENZIE, IAN ..... *Medical Arts Bldg.*
MARGOLIN, BERTHA ..... *Medical Arts Bldg.*
MARKLAND, J. D. ..... *Medical Arts Bldg.*
MAYGINNIS, P. H. ..... *Palace Bldg.*
McDONALD, J. E. ..... *Medical Arts Bldg.*
McGILL, RALPH A. ..... *Medical Arts Bldg.*
McKELLAR, MALCOLM M. ..... *Springer Clinic*
McQUAKER, MOLLY ..... 1552 *E. 17th Place*
MILLER GEORGE H. ..... 206 *Atlas Life Bldg.*
MINER, JAMES L. ..... *Medical Arts Bldg.*
MISHLER, D. L. ..... *Springer Clinic*
MITCHELL, TOM HALL ..... *Nat'l Bank of Tulsa*
MOHRMAN, S. S. ..... 611 *Daniels Bldg.*
MUNDING, L. A. ..... *Medical Arts Bldg.*
MURDOCK, H. D. ..... *Medical Arts Bldg.*
MURRAY, P. G. ..... *Medical Arts Bldg.*
MURRAY, SILAS ..... *Medical Arts Bldg.*
MYERS, F. C. ..... *Daniels Bldg.*
NEAL, JAMES H. ..... 1944 *N. Denver Place*
NELSON, FRANK J. ..... *Medical Arts Bldg.*
NELSON, F. L. ..... 607 *Atlas Life Bldg.*
NELSON, I. A. ..... *Medical Arts Bldg.*
NELSON, M. O. ..... *Medical Arts Bldg.*
NESBITT, E. P. ..... *Medical Arts Bldg.*
NESBITT, P. P. ..... *Medical Arts Bldg.*
NORMAN, G. R. ..... 171½ *N. Lewis*
NORTHRUP, L. C. ..... 1307 *S. Main*
OSBORN, GEORGE R. ..... *Medical Arts Bldg.*
PAVY, C. A. ..... *Medical Arts Bldg.*
PEDEN, JAMES C. ..... *Medical Arts Bldg.*
PERRY, HUGH ..... 804 *Atlas Life Bldg.*
PERRY, JOHN C. ..... *Medical Arts Bldg.*
PIGFORD, A. W. ..... *Medical Arts Bldg.*
PIGFORD, R. C. ..... *Medical Arts Bldg.*
PORTER, H. H. ..... *Medical Arts Bldg.*
PRESSON, L. C. ..... 1305 *E. 15th St.*
PRICE, H. P. ..... *Medical Arts Bldg.*
RAMEY, CLYDE ..... 612 *Palace Bldg.*
RAY, R. G. ..... 915 *S. Cincinnati*
REESE, K. C. ..... *Medical Arts Bldg.*
REYNOLDS, J. L. ..... 305 *Palace Bldg.*
RHODES, R. E. L. ..... *Medical Arts Bldg.*
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ROGERS, J. W. ..... *Medical Arts Bldg.*
ROTH, A. W. ..... *Medical Arts Bldg.*
RUPRECHT, H. A. ..... *Springer Clinic*
RUPRECHT, MARCELLA ..... *Springer Clinic*
RUSHING, F. E. ..... *Medical Arts Bldg.*
RUSSELL, G. R. ..... *Springer Clinic*
SCHRECK, PHILIP M. ..... *Medical Arts Bldg.*
SEARLE, M. J. ..... *Medical Arts Bldg.*
SHAPIRO, DAVID ..... 206 *Atlas Life Bldg.*
SHEPARD, R. M. ..... *Medical Arts Bldg.*
SHEPARD, S. C. ..... *Medical Arts Bldg.*
SHERWOOD, R. G. ..... 712 *Wright Bldg.*
SHIPP, J. D. ..... *Medical Arts Bldg.*
SHOWMAN, W. A. ..... *Medical Arts Bldg.*
SIMPSON, CARL F. ..... *Medical Arts Bldg.*
SINCLAIR, F. D. ..... *Springer Clinic*
SIPPEL, MARY EDNA ..... 1542 *E. 15th St.*
SISLER, WADE ..... *Mercy Hospital*
SMITH, D. O. ..... *Springer Clinic*
SMITH, NED R. ..... *Oakwood Sanitarium*
SMITH, ROY L. ..... *Medical Arts Bldg.*
SMITH, RURIC N. ..... *Medical Arts Bldg.*
SMITH, W. O. ..... 203 *Philcade Bldg.*
SPANN, LOGAN A. ..... *Braniff Bldg.*
SPOTTSWOOD, MAURICE D. ..... *Medical Arts Bldg.*
SPRINGER, M. P. ..... *Springer Clinic*
STALLINGS, T. W. ..... 724 *S. Elgin*
STANLEY, M. V. ..... 902 *N. Denver*
STEVENSON, JAMES ..... *Medical Arts Bldg.*
STEWART, H. B. ..... 2500 *E. 27th Place*
STUART, FRANK A. ..... *Medical Arts Bldg.*
STUART, LEON H. ..... *Medical Arts Bldg.*
SUMMERS, C. S. ..... 611 *Daniels Bldg.*
SWANSON, K. F. ..... *Springer Clinic*
TRAINOR, W. J. ..... *Medical Arts Bldg.*
TURNBOW, W. R. ..... *Medical Arts Bldg.*
UNDERWOOD, DAVID J. ..... *Medical Arts Bldg.*
UNDERWOOD, F. L. ..... *Medical Arts Bldg.*
UNGERMANN, A. H. ..... *Medical Arts Bldg.*
VENABLE, S. C. ..... *Tulsa County Medical Clinic*
WALKER, WILLIAM A. ..... 322 *Kennedy Bldg.*
WALL, GREGORY A. (honorary) ..... 1159 *N. Cheyenne*
WALLACE, J. E. ..... *Medical Arts Bldg.*
WARD, B. W. ..... *Wright Bldg.*
WEST, T. H. ..... *Medical Arts Bldg.*
WHITE, ERIC M. ..... *Medical Arts Bldg.*
WHITE, N. S. ..... *Medical Arts Bldg.*
*WHITE, PETER COPE ..... *Medical Arts Bldg.*
WILEY, A. RAY ..... *Medical Arts Bldg.*
WITCHER, R. B. ..... *Medical Arts Bldg.*
WOLFF, EUGENE G. ..... *St. John's Hospital*
WOODSON, FRED E. ..... *Medical Arts Bldg.*
ZINK, ROY ..... *Daniels Bldg.*

*Died May 26, 1941.

WAGONER

BATES, S. R. ..... *Wagoner*
PLUNKETT, J. H. ..... *Wagoner*
RIDDLE, H. K. ..... *Coweta*

WASHINGTON-NOWATA

ATHEY, J. V. ..... *Bartlesville*
BEECHWOOD, E. E. ..... *Bartlesville*
CHAMBERLIN, E. M. ..... *Bartlesville*
CRAWFORD, HORACE G. ..... *Bartlesville*
CRAWFORD, JOHN E. ..... *Bartlesville*
DAVIS, KIEFFER D. ..... *Nowata*

DORSHEIMER, GEORGE V. ..... *Dewey*
ETTER, FORREST S. ..... *Bartlesville*
GENTRY, RAYMOND C. ..... *Bartlesville*
GREEN, OTTO I. ..... *Bartlesville*
HUDSON, LAWRENCE D. ..... *Dewey*
KINGMAN, W. H. (honorary) ..... *Bartlesville*
KURTZ, R. L. ..... *Nowata*
LANG, S. A. ..... *Nowata*
LeBLANC, WILLIAM ..... *Ochelata*
PARKS, SETH M. ..... *Bartlesville*
REWERTS, FRED C. ..... *Bartlesville*
ROBERTS, S. P. ..... *Nowata*
RUCKER, RALPH W. ..... *Bartlesville*
SCOTT, M. B. ..... *Delaware*
SHIPMAN, WILLIAM H. ..... *Bartlesville*
SMITH, JOSEPH G. ..... *Bartlesville*
SOMERVILLE, OKEY S. ..... *Bartlesville*
STAVER, BENJAMIN F. ..... *Bartlesville*
TORREY, JOHN P. ..... *Bartlesville*
VANSANT, JAMES P. ..... *Dewey*
WEBER, HENRY C. ..... *Bartlesville*
WEBER, SHERWELL G. ..... *Bartlesville*
WELLS, CEPHAS J. ..... *Bartlesville*
WORD, LEE B. ..... *Bartlesville*

WASHITA

ADAMS, ALLEN C. ..... *Cordell*
BENNETT, D. W. ..... *Sentinel*
BUNGARDT, A. H. ..... *Cordell*
DARNELL, E. E. ..... *Ft. D. A. Russell, Marfa, Texas*
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McMURRY, JAMES F. ..... *Sentinel*
NEAL, A. S. ..... *Cordell*
STOWERS, AUBREY E. *Camp Barkeley, Abilene, Tex.*
TRACY, C. M. ..... *Sentinel*
WEAVER, E. S. ..... *Cordell*
WEBER, A. ..... *Bessie*

WOODS

BENJEGERDES, THEODORE D. ..... *Beaver*
CLAPPER, EBENEEZER P. (honorary) ..... *Waynoka*
DOUGAN, A. L. ..... *Carmen*
ENSOR, DANIEL B. ..... *Hopeton*
GRANTHAM, ELIZABETH (honorary) ..... *Alva*
HALL, RAY LORMER ..... *Stanberry, Mo.*
HUNT, ISAAC S. (honorary) ..... *Freedom*
LaFON, WILLIAM F. ..... *Waynoka*
McGREW, EDWIN A. ..... *Beaver*
ROYER, CHARLES A. ..... *Alva*
SIMON, JOHN F. ..... *Alva*
SIMON, WILLIAM E. ..... *Alva*
STEPHENSON, ISHMAEL F. ..... *Alva*
TEMPLIN, OSCAR E. ..... *Alva*
TRAVERSE, C. A. ..... *Alva*

WOODWARD

BEAM, J. P. ..... *Arnett*
CAMP, E. F. (honorary) ..... *Buffalo*
CHUMLEY, C. P. ..... *Supply*
DAY, JOHN L. ..... *Supply*
DUBE, PAUL H. ..... *Shattuck*
DUER, JOE ..... *Taloga*
DUNCAN, J. C. ..... *Forgan*
ENGLAND, MYRON ..... *Woodward*
JOHNSON, H. L. ..... *Supply*
KING, FRANK M. ..... *Woodward*
LEACHMAN, THAD C. ..... *Woodward*
MITCHELL, CLARENCE ..... *Supply*
NEWMAN, FLOYD ..... *Shattuck*
NEWMAN, HASKELL ..... *Shattuck*
NEWMAN, O. C. ..... *Shattuck*
NEWMAN, ROY ..... *Shattuck*
ORRICK, GEORGE W. ..... *Supply*
PIERSON, DWIGHT ..... *Buffalo*
RUTHERFORD, V. M. ..... *Woodward*
SILVERTHORN, CHARLES R. (honorary) .. *Woodward*
TEDROWE, C. W. ..... *Woodward*
TRIPLETT, T. BURKE ..... *Mooreland*
VINCENT, DUKE W. ..... *Vici*
WILLIAMS, C. E. ..... *Woodward*
WINCHELL, F. Z. ..... *Buffalo*

Opportunity for Practice

There is an opportunity for practice at Putnam, Okla., a town of about 350 population with a large rural territory. Anyone interested should contact Mrs. Orley Phelps at Putnam.

Proper Handling of Head Injuries Told

The proper handling of brain and skull injuries resolves itself into three categories, the prevention of infection, the treatment of increased intracranial pressure (in the space between the skull and brain) and th proper management of depressed fractures (in which a fragment of the skull is depressed below the surface), Bernard S. Brody, M.D., New Haven, Conn., points out in a recent issue of The Journal of the American Medical Association.

"The dissemination of opinion concerning the treatment of cranial injuries," Dr. Brody declares, "is important because the automobile has increased enormously the number of such patients for physicians in out of the way places where the services of a neurosurgeon are not readily available."

Statistics show that the majority of patients recover with ordinary bed rest supplemented in some instances by spinal puncture to relieve the intracranial pressure, the doctor says. Those patients with an uncomplicated concussion should be kept in bed for approximately from ten to fourteen days. X-rays of the skull, when needed for medicolegal reasons or otherwise, can be taken when the patient's condition warrants the effort.

A diagnostic spinal puncture should be done at some time within the first week. Any small amount of bleeding which might have been present may be missed after seven days. For patients whose spinal fluid is bloody or whose period of unconsciousness is prolonged, the diagnosis of simple concussion alone is no longer tenable and the period of bed rest must be proportionately longer.

Logic:

The human body does not store Vitamin B1 in adequate quantities.

Therefore ButterKrust Vita-B Bread (one food that can be eaten with enjoyment at EVERY meal) will help to supply B1 AS IT IS NEEDED.

Contains all the Vitamins found in Wheat, including over 600 Int. Units B1 per loaf. (Averaging about 30 units per slice.)

ASSOCIATION ACTIVITIES

ATTENDANCE RECORD OF 969 MARKS ANNUAL STATE SESSION

Highlighted by a record attendance figure, the President's Inaugural Dinner-Dance, a Selective Service meeting, a buffet supper given by the Oklahoma County Medical Association, and the talks of the eleven speakers from out of the state, the Forty-ninth Annual Session of the Oklahoma State Medical Association was convened May 19, 20, and 21 at the Skirvin Tower Hotel, Oklahoma City.

When the session was adjourned the afternoon of May 21, the final attendance figure was 969.

Host group for the session was the Oklahoma County Medical Association, headed by Dr. C. R. Rountree, Oklahoma City, as general chairman of arrangements. Oklahoma County doctors entertained with a buffet supper in the Skirvin hotel proper, Monday, May 19, when Col. W. Lee Hart, Surgeon in the Eighth Corps Area, Fort Sam Houston, Tex., discussed "Organized Medicine in the National Defense Program," and Harold Andersen, of the Federal Bureau of Investigation office, Oklahoma City, discussed the FBI.

Dr. Finis W. Ewing, 1940-1941 President-Elect, Muskogee, took the reins of office from Dr. Henry H. Turner, retiring President, Oklahoma City, at an inaugural dinner-dance, Tuesday, May 20, on the Fourteenth Floor of the Skirvin hotel proper.

New Officers to Serve With Ewing

Elected to serve with Doctor Ewing during his term were Dr. J. D. Osborn, President-Elect, Frederick; Dr. C. R. Rountree, Vice-President, Oklahoma City; Dr. L. J. Moorman, Secretary-Treasurer, Oklahoma City; Dr. P. P. Nesbitt, Speaker of the House of Delegates, Tulsa; Dr. H. K. Speed, Vice-Speaker of the House of Delegates, Sayre; and Dr. A. S. Risser, Junior Delegate to the American Medical Association meeting, Blackwell.

Guest speakers for scientific sections of the meeting included Dr. James R. Reinberger, Associate Professor of Obstetrics of the University of Tennessee School of Medicine, Memphis, Tenn.; Dr. Meyer Wiener, Professor of Clinical Ophthalmology at the Washington University School of Medicine, St. Louis, Mo.; Dr. Earl Garside, Attending Surgeon of the Augustana Hospital, Chicago, Ill.; Dr. Ralph Pemberton, Professor of Medicine of the Graduate School of the University of Pennsylvania, Philadelphia, Pa.; Dr. Lauren H. Smith, Physician-in-Chief and Administrator of the Department for Mental Diseases and the Institute of the Pennsylvania Hospital, Philadelphia, Pa.; and Dr. A. N. Arneson, Instructor in Clinical Obstetrics, Gynecology and Therapeutic Radiology at the Washington University School of Medicine, St. Louis, Mo.

A new and extraordinary part of the session was the Selective Service Examining Physicians meeting, Monday, May 19, in the Silver Glade room of the Skirvin Tower hotel. Maj. Louis H. Ritzhaupt, M.D., Guthrie, presided over this group.

The two guest speakers at this meeting were Lt. Col. Richard H. Eanes, Assistant to the Chief of the Medical Division of the Selective Service National Headquarters, Washington, D. C., who spoke on "The Problems Concerning Selective Service Examinations," and Col. W. Lee Hart, who discussed "The Correlation of the Physician's Examination as Required by Selective Service and the United States Army."

The program also included an address by Governor Leon C. Phillips; a talk, "The Examining Physician's Responsibility in Selecting the Nation's Manpower," by Col. Clive E. Murray, Acting State Director of the Oklahoma State Selective Service Headquarters, Oklahoma City; and a talk, "The Mental Standard for Men in the Armed Forces of the United States," by Dr. D. W. Griffin, Superintendent of the Central State Hospital, Norman. Other parts of the program were talks by Local Board Examining Physicians, and by members of the Medical Advisory Board, and a round table discussion.

Three other guest speakers addressed the Oklahoma Pediatric Association meeting and the Public Health meeting. Dr. Herbert J. Rinkel, Kansas City, Mo., spoke on "Allergy—A Discussion of the General Principles," and "Allergy in Relation to Certain Clinical Syndromes" in the meeting of the Pediatric association, Monday, May 19.

Dr. I. Forrest Huddelson, Research Professor of Bacteriology at Michigan State College, Lansing, Mich., and Dr. Robert B. Greenblatt, Professor of Experimental Medicine of the University of Georgia, Augusta, Ga., were the speakers at the Public Health meeting Tuesday, May 20. Doctor Huddelson discussed "The Diagnosis and Control of Burcellosis," and Doctor Greenblatt talked on "Public Health Aspects of the Five Venereal Diseases."

Council Creates New Sections

The meetings of the Council and the House of Delegates were marked by the creation of two new Scientific Sections and the acceptance of six new honorary members of the Association.

On a petition by the physicians of the Oklahoma State Health Department, the Council created a Section on Public Health. The Council also accepted a request for the separation of the Section on Obstetrics and Pediatrics into two Sections, one on Pediatrics, and one on Obstetrics and Gynecology.

Dr. Ned R. Smith, Tulsa, was re-elected by the Council as a member of the Editorial Board.

Six New Honorary Members Accepted

In accordance with the provisions of the By-Laws of the Association, six members in good standing, whose names were on record in the office of the Association, were accepted by the House of Delegates as honorary members. They are Dr. J. W. Browning, Geary; Dr. C. E. Wann, Albany; Dr. P. L. Cain, Albany; Dr. C. E. Sexton, Stillwater; Dr. Edward M. Harris, Cushing, and the late Dr. Calbert H. Beach, Glencoe.

New Councilors elected by the House were Dr. Tom Lowry, Oklahoma City, District 4; Dr. C. W. Arrendell, Ponca City, District 3, and Dr. J. I. Hollingsworth, Waurika, District 5.

Upon request, the House also passed a resolution to transfer Major county from District 1 to District 3.

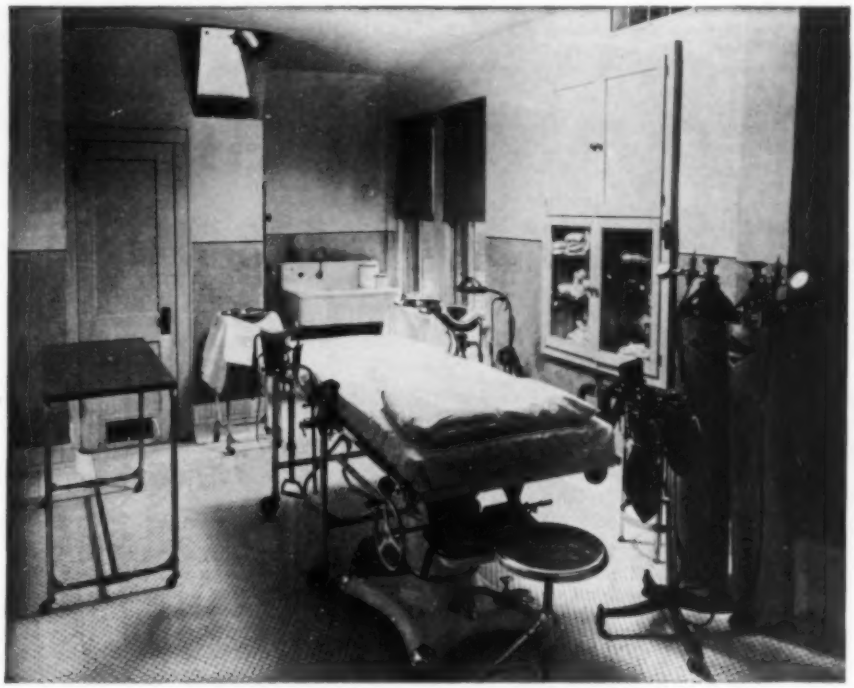
Nine Physicians Win Golf Trophies

Nine trophies and prizes were presented to winners in the annual Golf Tournament, held Monday, May 19, at the Oklahoma City Golf and Country club.

Dr. Zale Chaffin, Oklahoma City, was awarded the Buckley cup, as winner of the Low Medal Championship flight, and Dr. Hugh Jeter, Oklahoma City, as runner-up in the flight, won the Nestle's Milk Products, Inc., award.

In the Handicap flight, Dr. A. W. Pigford, Tulsa, was the winner of the Lev Prichard award, and Dr. Silas Murray, Tulsa, runner-up, won the Industrial Printing company award.

Winners in the Senior Championship flight were Dr.



There Are Facilities for Safe, Comfortable Child-birth at Polyclinic.

THIS DELIVERY ROOM IS AIR CONDITIONED

Physicians and patients alike find satisfaction in the air conditioned delivery room of Polyclinic's maternity department. In the moderately cool, freshened air the patient is in better physical condition and free of perspiration. Physicians and nurses perform their work in cool comfort.

Polyclinic's delivery room was especially designed and is equipped in the most modern manner. There are facilities for the proper administration of gas, with its gratifying relief from pain. Every device for safe-guarding mother and child is at the physician's hand.

MARVIN E. STOUT, M.D.
Owner

JOHN A. CUNNINGHAM, M.D.
House Surgeon

POLYCLINIC HOSPITAL

THIRTEENTH and ROBINSON OKLAHOMA CITY

Albert Cook, Tulsa, who won first, and Dr. George R. Osborn, Tulsa, runner-up.

The Championship Bogey flight winners included Dr. Ned Burleson, Prague; Maj. N. L. Miller, M.D., Camp Barkeley, Texas; and Dr. C. B. Sullivan, Carnegie.

Those who contributed awards and prizes for the Senior and Bogey flights were the Caviness Surgical Supply company, the Veazey Drug company, the Roach Drug company, Wick's Drug Shoppe and the Alexander Drug company.

Women's Auxiliary Elects Officers

Mrs. Edward D. Greenberger, McAlester, presided as new President over the meeting of the Women's Auxiliary. Mrs. Greenberger succeeded Mrs. W. A. Fowler, Norman, as President.

Mrs. Frank L. Flack, Tulsa, was elected by the Auxiliary to serve as President-Elect for the 1941-42 term. Other officers elected at the meeting were Mrs. Rush Wright, Vice-President, Poteau; Mrs. Elbert H. Shuller, Secretary, McAlester; Mrs. L. S. Willour, Treasurer, McAlester; Mrs. A. R. Sugg, Historian, Ada, and Mrs. W. A. Fowler, Parliamentarian, Norman.

Committee Chairmen who were appointed for the new term are: Public Relations—Mrs. Charles Rayburn, Norman; Program and Health—Mrs. James Stevenson, Prague; Hygeia—Mrs. Frank L. Flack, Tulsa; Student Loan—Mrs. E. Eugene Rice, Shawnee; Press and Publicity—Mrs. Charles A. Smith, Oklahoma City; Exhibits—Mrs. J. W. Rogers, Tulsa; Convention—Mrs. J. W. Childs, Tulsa; Tray Award—Mrs. W. S. Larabee, Tulsa, and Organization—Mrs. Rush L. Wright, Poteau.

The Tray Award for 1940-41 was presented to the Pittsburg County Medical Auxiliary.

Memorial Service Held For Dr. Long

An inspiring part of the session was the Memorial ceremony to commemorate the distinguished service which the late Dr. Le Roy Long gave to the medical profession. On Monday, May 19, in the Auditorium of the Medical School, Dr. L. S. Willour, McAlester, presented in behalf of the Association a Memorial Tablet to the University of Oklahoma. The Tablet was accepted for the University by President W. B. Bizzell, Normal.

• OBITUARIES •

Dr. Peter Cope White
(1889-1941)

Dr. Peter Cope White, Tulsa, who was known throughout the state for his persistent fight against trachoma among the Indians, died May 26 in Tulsa. His death followed an appendectomy.

Doctor White was born in Carbondale, Pa., and was graduated from the Jefferson Medical School of the University of Pennsylvania. Serving his interneship at the Manhattan Eye, Ear, Nose and Throat Clinic, Doctor White expressed early in his career his desire to specialize in the eye, ear, nose and throat field.

With his brother, Dr. Daniel W. White, who died nine years ago, Dr. White gained international prominence with their work in the treatment and technique of operation for trachoma, then the scourge of the Indians. In 1913, the two brothers published a paper on the subject, and became known as authorities on trachoma.

Doctor White came to Oklahoma in 1913 to join his brother, who was working among the Creek and Cherokee Indians under a government commission. It was then that the late Charles Page built a hospital for the brothers near Sand Springs. The hospital is now known as the Oakwood Sanitarium.

Later, the two doctors gave up the hospital and entered private practice in Tulsa.

Surviving Doctor White are his mother, a sister, Mrs. Peter J. McCormick; an aunt, Mrs. Dan W. Collins; two cousins, Mrs. Vera Noss and Miss Beatrice Collins, and two nieces and a nephew, all of Wilkes-Barre, Pa.

Dr. Calbert Harvey Beach
(1861-1941)

Death deprived the Oklahoma State Medical Association of one of its most beloved members, when Dr. Calbert Harvey Beach, Glencoe, passed away, May 15, at the Municipal Hospital, Pawnee.

Doctor Beach was born at Racine, Wis., November 30, 1861. When he was 17 years old, he moved with his parents to Elk Falls.

He attended the Manhattan Agricultural college, Manhattan, Kan., and the Teachers' Normal school at Ft. Scott, Kan., then moved to Missouri, where he attended the Missouri School of Medicine, St. Louis, in 1885. After his graduation in 1889, he began the practice of medicine with Dr. J. T. Arnold at Gainseville, Mo.

In 1889, when Doctor Beach was visiting his two brothers, Charles and Will Beach, in Oklahoma, he made the run of the Cherokee Strip opening, from the southern border of the strip as far as Pawnee. In 1900, he returned to Oklahoma and built his home in Glencoe, where he remained until his death.

His survivors include his wife, Mrs. Eula Beach, Glencoe, and four children, Mrs. Celeste Purcell, Guthrie; Clyde D. Beach, San Francisco, Calif.; Mrs. Zola Cooke, Birmingham, Ala.; and Mark E. Beach, San Bernardino, Calif.

Dr. J. E. Jones
(1864-1941)

On May 23, the Oklahoma State Medical Association lost one of its most beloved members with the death of Dr. J. E. Jones, pioneer citizen of Hollis. Death followed a series of heart attacks.

Doctor Jones, the first physician to locate in what is now Hollis, had celebrated 50 years of practice in March, 1940. It was in 1940, also, that he was voted an honorary member of the Association.

Doctor Jones was born in Tower Hill, Ill., December 28, 1864. After studying medicine, he entered the medical profession at Charity, Mo., where he remained for nine years. Then, he moved to the territory from which the town of Hollis later grew.

Surviving members of his family include his wife, Mrs. Florence Jones; three daughters, Mrs. H. F. Charlton, Mrs. Versie Giles, Miss Verle Jones; one son, James Edwin Jones, Jr.; two brothers, Lee Jones, Las Animas, Colo., and Green Jones, Midland, Texas; five grandchildren, James and Boothe Charlton, Margaret Giles Slaten, Jack Giles, and James Edwin Jones III; and two great grandchildren, Jimmy Giles Slaten and Jon Slaten.

House of Delegates Proceedings To Appear in July Issue

Because of the inclusion of the 1941 Membership Roster in the June issue of the Journal, the full proceedings of the House of Delegates at the Annual Session could not be carried in this issue.

A complete account of the House proceedings will appear in the July issue, however.

Summer Diarrhea in Babies

Casec (calcium caseinate), which is almost wholly a combination of protein and calcium, offers a quickly effective method of treating all types of diarrhea, both in bottle-fed and breast-fed infants. For the former, the carbohydrate is temporarily omitted from the 24-hour formula and replaced with 8 level tablespoonfuls of Casec. Within a day or two the diarrhea will usually be arrested, and carbohydrate in the form of Dextri-Maltose may safely be added to the formula and the Casec gradually eliminated. Three to six teaspoonfuls of a thin paste of Casec in water, given before each nursing, is well indicated for loose stools in breast-fed babies. Please send for samples to Mead Johnson & Company, Evansville, Indiana.

Recognized As A Specific In Pellagra

Administration of nicotinic acid in appropriate doses in cases of pellagra generally leads to the disappearance of alimentary, dermal, and other lesions characteristic of the disease and to a profound improvement in the mental symptoms when the latter are the result of an inadequate intake of nicotinic acid.

Pellagra, however, is frequently accompanied by evidences of deficiencies of other factors of the vitamin B complex, such as polyneuritis (a manifestation of vitamin B_1 deficiency). In the diets of such patients it may be necessary to insure the presence of foods rich in the vitamin B complex, or to administer—concurrently with the nicotinic acid—thiamine hydrochloride, riboflavin, and, in some instances, pyridoxine hydrochloride.

Nicotinic acid is pyridine-3-carboxylic acid.

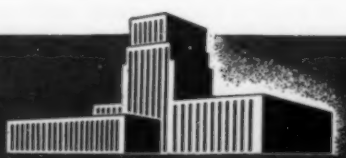
Nicotinic Acid (Upjohn) is available in in the following dosage forms:

C. T. Nicotinic Acid, 20 mg.

C. T. Nicotinic Acid, 50 mg.

C. T. Nicotinic Acid, 100 mg.

in bottles of 100 and 1000 tablets.



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NEWS FROM THE COUNTY SOCIETIES

About 11 members of the Garvin County Medical society were present at the meeting May 14 in Pauls Valley. Members discussed N.Y.A. examinations, and voted Dr. Hugh Monroe, Lindsay, to take charge of the program for the next meeting.

The Garvin society then adjourned for the summer months. Members will meet again in September at Pauls Valley, with Doctor Monroe as speaker.

Two guest speakers were presented at the regular meeting of the Grady-Caddo-Stephens counties' society May 15, in Chickasha.

Dr. Philip M. McNeill, Oklahoma City, reviewed papers of interest to the general practitioner which were presented at a recent meeting of the College of Physicians in Boston.

Dr. William L. Bonham, Oklahoma City, the other speaker, discussed "Sinusitis: Its Management by the General Practitioner."

About 30 members of the society were present. Following the program, informal entertainment was held for the wives of the physicians visiting from Oklahoma City, Duncan, Marlow and Anadarko and other towns.

The next meeting will be held June 19 at Chickasha, when the Stephens county members will be in charge of arrangements.

Dr. Coyne Campbell and Dr. Charles A. Smith, both of Oklahoma City, were the guest speakers at the May 12 meeting of the Okfuskee-Okmulgee counties' society in Okmulgee. About 22 members were present.

Doctor Campbell discussed "Neuroses," and Doctor Smith described the "Technic of Shock Treatment." Doctor Smith illustrated his talk with motion pictures.

The society will meet again June 9 at Okemah.

The Creek county society met May 13 at Bristow, with about 12 members in attendance. Speaker at the meeting was Dr. Ned R. Smith, Tulsa, who discussed "The Nervous Patient."

Members will meet again, June 10, at Sapulpa.

About 20 members of the Pottawatomie county society were present at the May 17 meeting in Shawnee.

The program, which was presented by Dr. John H. Lamb, Oklahoma City, Dr. Horton E. Hughes, Shawnee, and Dr. John McFarling, Shawnee, consisted of still and moving pictures of uncommon skin conditions.

The next meeting will be held June 21, in Shawnee.

Dr. R. K. Pemberton and Dr. F. T. Bartheld, both of McAlester, conducted a symposium on Obstetrics at the meeting, May 13, of the Pittsburg county society at St. Mary's hospital, McAlester.

Among the subjects of the prepared talks given by ten members were "Indications for Abortion," "Diabetis and Cardiac Disturbances in Pregnancy," "X-Ray in Obstetrics," and "Cervical and Perineal Lacerations."

Dr. W. P. Fite and Dr. E. H. Fite, both of Muskogee, will speak at the next meeting, June 20, at the Albert Pike hospital, McAlester. Their respective subjects will be "Transurethal Resection" and "Intracapsular Neck Fracture of Femur."

Members of the Pre-Clinical faculty of the Oklahoma School of Medicine presented the program at the Oklahoma County society meeting, May 27, in the Medical School auditorium. About 50 members were present.

Dr. Donald B. McMullen of the Department of Public Health, discussed "The Incidence of Intestinal Parasites in School Children." Dr. Frances C. Lawler, of the Department of Bacteriology, the other speaker, chose "The Incidence of Monilia in the Gastro-Intestinal Tract" as his subject.

Following the program, the group adjourned until September 23, when they will meet again in the Medical School auditorium.

Another county group held its last meeting before adjournment for the summer months, when members of the Tulsa county society met May 26 at the Mayo Hotel, Tulsa.

Dr. Graham Asher, F.A.C.P., Kansas City, Mo., spoke on "Chemical, Nutritional and Clinical Factors Influencing the Administration of Digitalis." Dr. Asher, a graduate of the Rush Medical School, Chicago, is a Diplomat of the American Board of Internal Medicine, University of Kansas School of Medicine.

Three speakers composed the program of the Woods-Alfalfa county society meeting, May 27, in Cherokee. About 14 members were present.

The speakers were Dr. Charles E. Rombold, Wichita, Kan., who spoke on "Back Ache;" Dr. John H. Kleinheksel, also of Wichita, who spoke on "Diabetes," and Dr. Jack C. Parsons, Cherokee, who spoke on "Endocrines."

Following the program, Dr. L. T. Lancaster and Dr. H. E. Huston were hosts to the group at a barbecued steak and turkey dinner. The society then adjourned until September 30, when members will meet in Alva to begin arrangements for a series of pre-school clinics to be held by the Woods society.

Group Hospital Service News

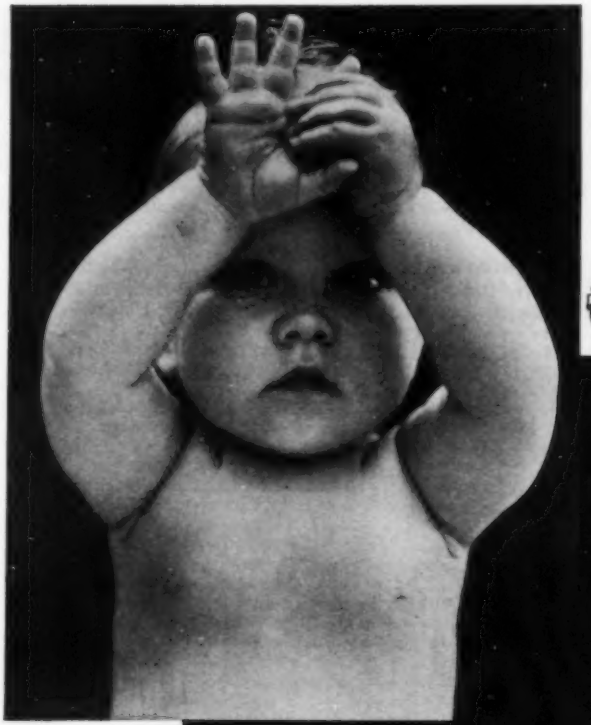
Our Hospitals—Our Plans

National Hospital Day, May 12, provided the occasion for four groups to proclaim and reaffirm their interdependence in the common desire to provide hospital care to the American people. These groups are: hospital administrators and trustees, who coordinate paid personnel and scientific equipment; medical staffs, who assume primary and continuous responsibility for diagnosis and treatment; hospital service plans, which are a rational means for budgeting hospital care; and subscribers, who pay their subscriptions and receive the service.

Hospital service plans are dependent upon the guarantee of member hospitals for service to their subscribers. Enrollment representatives of approved plans may, in a very real sense, speak of "our Hospitals." Conversely, the hospitals, which sponsor and support the group budgeting plan in a community, are correct when they say "our Plan."

The medical staff and subscribers, in turn, may speak of both "our plan" and "our hospitals." The physician who determines which subscribers are to receive benefits under an approved hospital service plan also prescribes and directs the care in the member hospitals. The subscribers who contribute regular amounts with which to pay their bills also receive services in hospitals which are constructed and supported from communtiy resources and contributions.

Each of the four groups—hospitals, doctors, plan, and subscribers—are component forces which have made the hospitals "guardians of health" for the nation. Their joint activities exemplify the combination of private enterprise and social responsibility which we designate with justifiable pride as "the American way of life."



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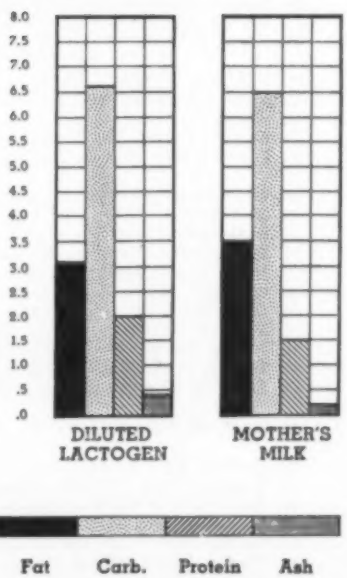

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"My own belief is, as already stated, that the average well baby thrives best on artificial foods in which the relations of the fat, sugar, and protein in the mixture are similar to those in human milk."

John Lovett Morse, A. M., M. D.
Clinical Pediatrics, p. 156.

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University of Oklahoma School of Medicine

Dr. Paul C. Colonna, professor of orthopaedic surgery, was guest speaker of the Fifth Annual Meeting of the New Orleans Graduate Assembly, March 3 to 6. Doctor Colonna presented three papers: "The Treatment of Compound Fractures," "Nonunion of the Femoral Neck," and "The Painful Shoulder."

Dr. Berry Campbell, assistant professor of medicine, who has been on a leave of absence while studying at the Rockefeller Institute of Medical Research on a Guggenheim Fellowship, has been reappointed for a continuation of this fellowship for the scholastic year 1941-42. Dr. Russell L. Moseley will continue to fill his place in the Department of Anatomy—"ad interim."

All seniors in the School of Medicine have received their internships, and the following list gives the names of the senior students and the hospitals where they will serve as interns for the year commencing July 1, 1941:

NAME	HOSPITAL	ADDRESS
1. Aldredge, Wm. Max	St. Louis City Hospital	St. Louis, Missouri
2. Asher, James Ottley	Wesley Hospital	Oklahoma City, Oklahoma
3. Bener, Herman Robert	Broadlawns—Polk Co. Public Hos.	Des Moines, Iowa
4. Boyer, Harold Lester	New Rochelle Hospital	New Rochelle, New York
5. Brightwell, Richard J.	St. Anthony Hospital	Oklahoma City, Oklahoma
6. Buford, Elvin Lee	The Hamot Hospital	Erie, Pennsylvania
7. Cole, William Charles	Wesley Hospital	Oklahoma City, Oklahoma
8. Colvert, James Robert	Columbia Hospital	Milwaukee, Wisconsin
9. Colyar, Ardell Benton	Broadlawns—Polk Co. Public Hos.	Des Moines, Iowa
10. Davis, Wesley Warren	Good Samaritan Hospital	Portland, Oregon
11. Denyer, Hillard Earl	New Rochelle Hospital	New Rochelle, New York
12. Dodson, Harrell Chandler	State University Hospitals	Oklahoma City, Oklahoma
13. Drennan, Stanley Lewis	Orange County Hospital	Orange, California
14. Fair, Ellis Edwin	State University Hospitals	Oklahoma City, Oklahoma
15. Farris, Edward Merhige	Baltimore City Hospitals	Baltimore, Maryland
16. Fleetwood, Doyle Homer	Wesley Hospital	Oklahoma City, Oklahoma
17. Flood, William Robert	Alameda County Hospital	Oakland, California
18. Florence, Robert Wm.	Providence Hospital	Seattle, Washington
19. Freeman, Charles Winfred	Charleston General Hospital	Charleston, West Virginia
20. Goggin, Chester William	San Diego County General Hos.	San Diego, California
21. Guss, Louis	Beth Moses Hospital	Brooklyn, New York
22. Haberlein, Charles Robt.	Grace Hospital	Detroit, Michigan
23. Harms, Harold Harvey	University of Nebraska Hosps.	Omaha, Nebraska
24. Heilman, Elwood Hess	Hospital Division of the Medical College of Virginia	Richmond, Virginia
25. Hendren, Walter Scott	Baltimore City Hospitals	Baltimore, Maryland
26. Hesser, James Matthew	Presbyterian Hospital	Denver, Colorado
27. Hoffer, Maxine Ruth	Oak Park Hospital	Chicago, Illinois
28. Horn, John Edward	Central Dispensary and Emergency Hospital	Washington, D. C.
29. Hubbard, Wm. Ecton	Mercy Hospital	Denver, Colorado
30. Katz, Morris Elliott	Wm. W. Backus Hospital	Norwich, Connecticut
31. Kennedy, James Ralph	Mercy Hospital	Denver, Colorado
32. Lester, Eugene Fay	St. Vincent's Hospital	Erie, Pennsylvania
33. Love, Albert Joseph	Presbyterian Hospital—Olmstead Memorial	Hollywood, California
34. McClellan, Charles Wm.	Broadlawns—Polk Co. Public Hos.	Des Moines, Iowa
35. McKinnon, Jeanne Elise	Santa Barbara Cottage Hospital	Santa Barbara, California
36. McQuown, Albert Louis	University of Iowa Hospitals	Iowa City, Iowa
37. Montgomery, Hazel Irene	Sibley Memorial Hospital	Washington, D. C.
38. Mraz, Gerald Lincoln	St. Paul's Hospital	Vancouver, B. C., Canada
39. Overbey, Charles Brown	Emory University Hospital	Emory University, Georgia
40. Paris, David	Mary Immaculate Hospital	Jamaica, New York
41. Pearson, Daniel Bester	Wesley Hospital	Oklahoma City, Oklahoma
42. Points, Thomas Craig	Saginaw General Hospital	Saginaw, Michigan
43. Powell, Paul Thurston	Gallinger Municipal Hospital	Washington, D. C.
44. Reiff, William Henry	The University of Michigan Hospitals	Ann Arbor, Michigan
45. Rowland, Robert Hazel	University of Texas—John Sealy Hospital	Galveston, Texas
46. Salkeld, Phil Lloyd	Columbia Hospital	Milwaukee, Wisconsin
47. Sandlin, Dean Clifford	Good Samaritan Hospital	Portland, Oregon
48. Sanford, Roy Keith	Colorado General Hospital	Denver, Colorado
49. Shofstall, Wm. Howard	University of Kansas Hospital	Kansas City, Kansas
50. Smith, Paul Frederick	Missouri Methodist Hospital	St. Joseph, Missouri
51. Taylor, Lloyd Wilson	Central Dispensary and Emergency Hospital	Washington, D. C.
52. Weeks, Bertram Allen	The Station Hospital, Fort Sam Houston	San Antonio, Texas
53. Witt, Richard Earl	St. Anthony Hospital	Oklahoma City, Oklahoma
54. Word, Emery France	St. Paul's Hospital	Vancouver, B. C., Canada

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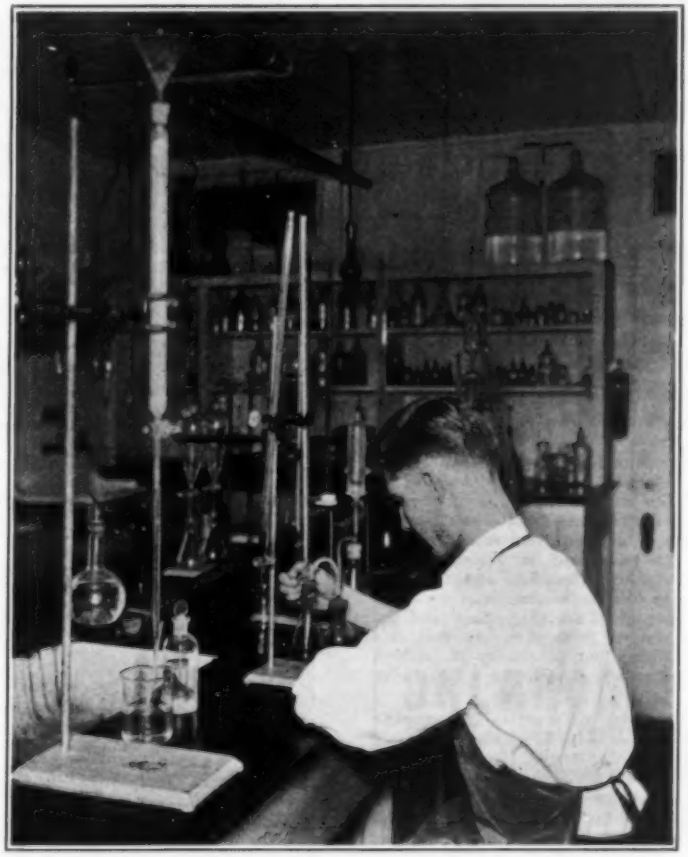

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BOOK REVIEWS

"The chief glory of every people arises from its authors."—Dr. Samuel Johnson.

WINSTON CHURCHILL—A BIOGRAPHY, By Rene Kraus. Price $3.00. Philadelphia-New York: J. B. Lippincott Company.

For all doctors who are overworked, underpaid, growing tired and feeling glum; who think their professional foundations are being undermined, their cherished traditions destroyed and that the precarious present is not worth their best and the future not worthy of hope and persistent striving for a goal, we recommend *Winston Churchill* by Rene Kraus.

No one can read this book without being enlightened and inspired; without realizing the unique genius, undaunted courage and astounding foresight of Mr. Churchill. The reading brings a growing consciousness of his greatness and a chastening sense of the reader's inadequate response to life. The depth of Mr. Churchill's generous philosophy, the scope of his imagination, his elevation of purpose, his originality, rectitude, fertility, precision, variety, flexibility, and level vision, should inspire us to carry on even in the face of "blood, toil, tears and sweat," and if need be, to accept the "black-out without gloom."

When the last chapter is read and the book closed, one is in the mood for Mordaunt's "Sound, Sound the Clarion," which closes with these lines:

"One crowded hour of glorious life
Is worth an age without a name,"—L.J.M.

AS I REMEMBER HIM: THE BIOGRAPHY OF R.S. By Hans Zinsser. Price $2.75. Boston: Little, Brown and Co., 1940.

Almost a whole generation of physicians will recall Hiss & Zinsser "Textbook of Bacteriology." Most of us naturally assumed its authors to be unimaginative compilers of endless and somewhat uninteresting scientific facts. That nothing could be farther from the truth is apparent to those who have read Dr. Zinsser's autobiography. "As I Remember Him: The Biography of R.S., is a transparently disguised autobiography written in both the third person as the biographer, and the first person as being quoted from R.S. At first this might seem a bit confusing but in reality it lends a certain degree of objectivity and avoids too much repetition of "I."

In essence, the book consists of a series of somewhat disconnected chapters on his background, education, hospital days, experiences in Serbia, Russia, Japan, China and Mexico. But what makes the book by all odds the best in the field of medical literature, and for that matter, gives it a high place in the field of any literature, is his magnificent ability for digression. These digressions consist of detached observations about a wide variety of subjects such as education, college presidents, women, wine, socialization of medicine, literature psychoanalysis and religion.

The general tone of the book is that of reminiscence interspersed with philosophical reflections and crystal clear discussions of the relations of one's life to the world in general.

R.S.'s contemplation of his own impending death is as remarkable and as dignified a contribution as one will find in English literature. (Dr. Zansser died Sept. 3, 1940, of leukemia).:

"As his malady progressed, he had another variety of experience which, to some others more conditioned to religious belief than he was, might have signified an intimation of the separateness of body and soul. He said to me: 'Here I am, me as always. My mind more alive and vivid than ever before; my sensitiveness keener; my affections stronger. I seem for the first time to see the world in clear perspective; I love people more deeply and more comprehensively; I seem to be just beginning to learn my business and see my work in its proper relationship to science as a whole; I seem to myself to have entered into a period of stronger feelings and saner understanding. And yet here am I—essentially unchanged except for a sort of distillation into a more concentrated me—held in a damaged body which will extinguish me with it when it dies. If it were a horse I was riding that went lame or broke its neck, or a ship on which I was traveling that sprang a leak, I could transfer to another and leave the old vehicle behind. As it is, my mind and my spirit, my thoughts and my love, all that I really am, is inseparably tied up with the failing capacities of these outworn organs." . . .

"As his disease caught up with him, R.S. felt increasingly grateful for the fact that death was coming to him with due warning, and gradually. So many times in his active life he had been near sudden death by accident, violence, or acute disease; and always he had thought that rapid and unexpected extinction would be most merciful. But now he was thankful that he had time to compose his spirit, and to spend a last year in affectionate and actually merry association with those dear to him." . . .

The Journal of the Americal Medical Association has no reputation for rave notices, but says: "Words fail to give any adequate picture of this exceptional book—again the reviewer can only say that the physician who fails to read it and re-read it again and again is depriving himself of some of the finest hours that literature can afford to a thoughtful man."—W.W.R., Jr.

PRINCIPALS OF SURGICAL CARE—SHOCK AND OTHER PROBLEMS. Alfred Blalock, M.D. C. V. Mosby Company.

This book should be in the hands of every progressive surgeon. It deals with the diagnosis and treatment of most of the conditions that cause grief to a surgeon, namely; complications. It covers all of the major and minor postoperative complications in a clear and concise manner.

Surgical technique, per se, is not included in any detail. However, it is mentioned repeatedly with caution in regard to tissue trauma.

The section on circulatory failure and shock is as complete a resume of recent work as can be found in late literature. It discusses the subject thoroughly, both from etiological and therapeutic standpoints. Doctor Blalock is one of the nations leading investigators in this field, and he has made many valuable contributions to our literature in the past ten years. This section alone is worth many times the price of the book. No surgeon can read it without gaining a much better insite into this important complication.

Such subjects of vital importance as hypoproteinemia, acid-base and nutritional disorders, fluid and electrolyte disorders, and endocrine dysfunction are also covered in a fascinating manner.

Doctor Blalock discusses the choice of anesthetics for most of the major surgical procedures. He is conservative and unbiased in his comments and conclusions. He prefers not to use cyclopropane because of its high explosive qualities, and he advises against operating above the umbilicus with spinal anesthesia. The gas-oxygen-ether combination is recommended as the best general anesthetic available at this time.

In present day surgery the operation is only part of the cure of the patient. Therefore, surgeons are devoting

more time and study to the disorders of metabolism and nutrition, and are making strides in the correction of them. The result of this is a decrease in morbidity and mortality, and it also means that many bad-risk patients may enjoy the advantages of the good-risk patients.

This book covers the subjects mentioned, together with many other important surgical subjects, completely and yet briefly. It is concise enough for a quick review, and complete enough for a permanent reference book. I heartily recommend it to the surgical specialist and to the general practitioner.—E.B.N.

COFFEE: A COLLECTION OF MEDICAL ABSTRACTS, Foreword by Milton A. Bridges, M. D., 64 pages. Published by the Pan American Coffee Bureau.

This scientific bibliography, with accompanying pertinent excerpts in condensed form from each reference, is the latest of its kind on coffee. Its purpose is best expressed by the late Dr. Milton A. Bridges in the foreword:

"Coffee has been the focus of so much exploitation, both honest and dishonest, both warranted and unwarranted, that a brief resume of the scientific viewpoint on the subject should be of interest . . . international literature has been carefully searched . . . the gleanings are here presented in abstract form with no differentiation between favorable or unfavorable reports."

The synopsis are arranged in alphabetical order according to authors. Accompanying the title and author of each source is a concise summary of the individual author's reference to coffee and caffeins, and the pages upon which the complete text may be found. Excerpts are based upon clinical research and observation, laboratory tests, and other studies. The book is indexed. Titles and authors include: Materia Medical, W. A. Bastedo; Digestive Disorders, Albert W. Bauer; A Textbook of Pharmacology and Therapeutics, Arthur R. Cushny; Your Diet and Your Health, Morris Fishbein, and 120 others.—L.S.W.

HOW TO PREVENT GOITER, By Dr. Israel Bram, Medical Director, Bram Institute for Goiter and Other Glandular Disease; former Instructor in Clinical Medicine, Jefferson Medical College, Philadelphia; Fellow of the American Medical Association. 182 pages. Published by E. P. Dutton and Co., Inc., N. Y. City.

This book is written to reach the over 7,000,000 Americans who suffer from goiter and other glandular diseases. Written in an untechnical style, it sets forth for the layman the simple rules of physical and mental conduct which help prevent disturbances of the thyroid. In words often telling of his own experiences with thousands of patients, he points out that disturbances of the thyroid are among the easiest of human ailments to prevent and cure.

It is not written as a medical book nor is it offered as a substitute for the physician.—L.S.W.

"Variety Drug Store" May Be Passing

A prediction that the modern "drug store" with its many different lines of goods will in time stop selling prescriptions and that up-to-date pharmacists' shops will take over this function exclusively was made by Emerson G. Wulling, Ph.D., La Crosse, Wisc., in the December issue of *Hygeia, The Health Magazine.*

Dr. Wulling attributes the "variety store" drug store to the influx of too many pharmacists and the fact that large manufacturing concerns arose with lines of pharmaceuticals. "With more pharmacists and less pharmaceutical work, the profession had to turn to other lines. A drug store became a variety store."

He points out, however, that now pharmaceutical instruction is centered in universities and requirements are much higher.

"Pharmacy, the real thing, is advancing at a thoroughly satisfactory pace and serving its important part in the health program."

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REVIEWS and CORRESPONDENCE

SURGERY AND GYNECOLOGY

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"Are the Anterior Pituitary-Like Substances Gonadotropic?" By Willis E. Brown, M.D., James T. Bradbury, D.Sc., Ann Arbor, Michigan, and Ida Metzger, M.D., Ypsilanti, Michigan. American Journal of Obstetrics and Gynecology, April 1941, Vol. 41, No. 4, Page 582.

The authors call attention to the fact that anterior pituitary-like substances from human pregnancy urine have produced well-known gonadotropic response in the mouse and rabbit but this response has not been found consistently throughout laboratory animals, nor has it been duplicated in the human female in any manner that will stand critical evaluation.

Therefore, "the present study was arranged to determine by clinical experimentation whether the anterior pituitary-like extracts of pregnancy urine have any demonstrable effect on the human ovary."

For this purpose, a reasonably small group of patients was studied with daily injections of 500 R. U. of antuitrin-S for four or six weeks. Since a reasonably large percentage of those with normal menstrual rhythm so treated experienced a subsequent amenorrhea confused by an occasional anovulatory bleeding, and since those with amenorrhea did not have uterine bleeding reestablished by the administration of the drug, the authors have come to the following conclusion:

"In view of this demonstrated suppression of ovarian activity, there would be no indication for the use of the anterior pituitary-like substances in ovarian hypofunction. The apparent success of antuitrin-S in some cases of functional bleeding can be more satisfactorily explained as the result of a suppression of ovarian follicles, so that the endometrium is relieved of a prolonged estrogenic stimulation. A total dose of 8,000 R. U. over a period of two weeks produced a four months' amenorrhea in one of our patients who had been bleeding continuously for eight months.

Twelve patients with a normal menstrual rhythm were given 500 R. U. of antuitrin-S daily for four or six weeks. The majority of these patients did not show any significant alteration in rhythm. Five (42 per cent) experienced an amenorrhea of from one to five months following treatment. This induced amenorrhea was accompanied by a progressive atrophy of the endometrium, indicating a suppression of ovarian follicles.

Antuitrin-S failed to establish uterine bleeding in patients with amenorrhea. No evidence of ovulation or luteinization, as demonstrated by a secretory endometrium, was found.

On the basis of this experiment it appears that the anterior pituitary-like substances are not gonadotropic in the human female and in sufficient dosage may even be gonadotoxic."

"The Effect of Combined Administration of Chorionic Gonadotropin and the Pituitary Synergist on the Human Ovary." By Charles Mazer, M.D., and Elkin Ravetz, M.D., Philadelphia, Pennsylvania. American Journal of Obstetrics and Gynecology; March 1941, Vol. 41, No. 3, Page 474.

This is the interesting report of a small group of patients treated by a combination of relatively small quantities of chorionic gonadotropin and pituitary gonadotropic extracts.

"In the human subject, in whom neither chorionic gonadotropin nor pituitary extracts exerts any appreciable influence on the ovaries, (the latter because of lack of concentration), the combination of relatively small quantities of each produced definite stimulation and overstimulation of the ovaries in 20 of 23 patients who received the product preoperatively.

Therapeutically, the combination of chorionic gonadotropin and the anterior pituitary extract evoked one or more menstrual flows in 19 of 23 severely amenorrheic women, some of whom had not menstruated for years, despite all other forms of treatment. Only two have thus far menstruated with further treatment.

Injections of the combined extracts arrested dysfunctional uterine bleeding in 14 of 18 patients(four of whom were puberal girls.

Only two of eight women in whom anovular menstruation was presumably the main cause of the barrenness conceived promptly. Overdosage and the presence of other etiologic factors partly explain the lack of responsiveness of this group of patients.

The increased effectiveness of chorionic gonadotropin with the addition of a pituitary extract containing very little of the gonad-stimulating hormones is variously explained as follows:

1. That it represents merely the expression of the combined physiologic activity of the two gonadotropins.
2. That chorionic gonadotropin probably converts a prohormone, supposedly present in the pituitary extracts, into an active gonad-stimulation hormone.
3. That most anterior pituitary extracts contain a principle capable of converting chorionic gonadotropin into a universal gonad-stimulation substance."

"Some Observations on the Gynecic Employment of Equine Gonadotropins." By E. C. Hamblen, M.D., Durham, N. C. American Journal of Obstetrics and Gynecology, March 1941, Vol. 41, No. 3, Page 495.

"1. Equine gonadotropins may stimulate ovaries which possess normal sensitivity to pituitary stimuli.

2. Equine gonadotropins are of value therapeutically in those women whose ovarian failure is due to deficient pituitary function.

3. The effects of equine gonadotropins are often temporary, the pituitary failure and the secondary ovarian failure recurring.

4. This last statement has a bearing upon the handling of pregnancy secured by this form of therapy. Intercurrent ovarian failure and abortion should be anticipated and prophylactic treatment instituted.

5. The combined one-two employment of equine and chorionic gonadotropins has proved more effective than the use of cyclic equine gonadotropic therapy alone.

6. Cyclic gonadotropic therapy in our hands fails to insure cyclic bleeding, thus indicating inadequate production of complete ovarian responses.

7. Equine gonadotropic therapy is only one of the methods available for the treatment of ovarian failure."

COMMENT: These three articles are valuable contributions when considered together since they represent our present gonadotropic agents.

The requirements of a satisfactory gonadotropic agent must be the induction of follicular growth, ovulation, and luteinization in the ovaries of the human female.

Though present pituitary gonadotropic extracts, if given in large quantities, may produce these effects in immature animals, they are insufficiently concentrated at present for therapeutic use.

The gonadotropic substance in the blood of pregnant mares has apparently had some effect in the treatment of sterility due to anovulatory menstruation, but it has not been effective in the treatment of the more common menstrual disorders of amenorrhea and so-called functional uterine bleeding.

The first article in this series reasonably well demonstrates the status of the gonadotropic influence of substances in human pregnancy urine.

By far the most important and interesting feature of this series of articles lies in the apparent synergistic effect between pituitary extracts and the anterior pituitary-like substances in pregnancy urine. This is similarly true in the observation of Hamblen in the apparent synergistic action of pregnant mares serum and chorionic gonadotropin.

The importance of this work lies in the fact that a satisfactory gonadotropic agent which will produce follicular growth, ovulation, and luteinization, will do more than anything else thus far to assist in the control of ovarian function and its consequent problems of sterility and menstrual irregularities.

There is adequate evidence in this series of investigations to cause one to be particularly cautious in the promiscuous employment of all of these so-called gonadotropic substances.

Wendell Long.

"Spinal Anesthesia and Surgical Shock." By Harry Koster, M.D., Arthur Shapiro, M.D., and Aaron Goldberg, B.S., Brooklyn, N. Y. Archives of Surgery, April 1941, Volume 42, Number 4, Page 795.

Marked fall in blood pressure during an operation with general or local anesthesia is usually accepted as an indication of severe hemorrhage, surgical shock or both. For this reason many surgeons believe that the fall in blood pressure which regularly accompanies induction of spinal anesthesia has equally grave significance. Methods have been introduced either to prevent the fall in blood pressure or to raise the blood pressure after it has reached what is considered a dangerously low level. Many also believe that spinal anesthesia is contraindicated in the presence of the hypotension secondary to traumatic shock, hemorrhage and peritonitis.

Dr. Koster some time ago concluded that the fall in blood pressure, accompanying spinal anesthesia, no matter how marked, is not of great significance and that hypotension per se is no contraindication to the use of spinal anesthesia. He believes that there is a marked difference between the circulatory status of patients under spinal anesthesia and that of patients in surgical shock.

Recent studies by Blalock and others have shown that in cases of surgical shock not accompanied with hemorrhage, the fall in blood pressure is preceded by marked hemoconcentration. Some even believe that hemoconcentration, as evidenced by a rise in the red cell count, the hemoglobin concentration or the specific gravity of the whole blood, is a better index of the presence and severity of surgical shock than is a fall in blood pressure.

These authors in an effort to determine whether the fall in blood pressure which occurs during spinal anesthesia is similar to that associated with surgical shock, studied the blood pressure and the concentration of hemoglobin in the blood before, during, and after spinal anesthesia.

In seven patients the blood pressure, pulse rate and concentration of hemoglobin were followed before, during and after spinal anesthesia. In ten patients the blood pressure, pulse rate and specific gravity of the serum were similarly studied.

Their results would indicate that the value for hemoglobin and the specific gravity of the blood serum fall slightly with the onset of spinal anesthesia and return gradually to their initial level.

They have found an absence of hemoconcentration with spinal anesthesia. This suggested to them a reexamination and reconsideration of the idea entertained by many surgeons that there is a similarity of the clinical status of patients in surgical shock to that of patients under spinal anesthesia.

They have proved to their satisfaction that the characteristics of the clinical status of patients in surgical shock and under spinal anesthesia are fundamentally different.

Of 17 characteristics compared, spinal anesthesia and surgical shock showed in their experiments complete similarity in only two characteristics. These were the appearance of the face and the presence of vomiting. They thought there was some similarity in moisture of the skin, thirst, venous pressure and mental attitude. They thought that the fall in blood pressure (which many of us have regarded a cardinal point in the similarity between surgical shock and spinal anesthesia) actually has a quite different characteristic in each.

They found that in the presence of shock the fall in blood pressure occurs late, after compensatory vasoconstriction no longer is effective in maintaining the normal level of blood pressure. By this time hemoconcentration is already marked. On the other hand, in the presence of spinal anesthesia, they found that the blood pressure falls early, and hemoconcentration does not occur.

Their conclusion is that "reasoning concerning indications or contraindications for spinal anesthesia, based upon the supposed analogy between its effects and the state of surgical shock is not valid."

COMMENT: Dr. Koster has been a spinal anesthesia enthusiast for many years. While some of us may be unduly concerned about the fall in blood pressure under spinal anesthesia, and may give that hypotension more serious consideration than it deserves, it is my personal opinion that we should continue to exercise care in selecting patients for spinal anesthesia.

LeRoy D. Long,

"Nipple Discharge, A Clinicopathologic Study." By Paul R. Hinchey, M.D., Salem, Massachusetts. Annals of Surgery, March 1941, Vol. 113, No. 3, Page 341.

The author gives a report based on the clinicopathologic study of 67 patients who had discharge from the nipple. These were the cases seen in the Tumor Clinics of the Massachusetts General Hospital and the Boston Dispensary over a 14½ year period.

Frequency: Some type of discharge from the nipple occurs in about eight per cent of all mammary lesions.

Type: A sanguineous discharge should arouse more concern than a nonsanguineous one. A duct papilloma often causes a serosanguinous discharge. A duct carcinoma commonly causes a dark bloody discharge. A grumous, greenish yellow discharge is almost always due to stasis in dilated ducts. A continuous, milky discharge is galactorrhea.

Etiology: The author found carcinoma to be the most frequent cause for nipple discharge, followed by chronic cystic mastitis and then duct papilloma and hormonal dysfunction.

Pathology: (1) Carcinoma—Twenty-two cases. Ten had bloody discharge. Twelve had nonsanguineous discharge. The author feels that there has been undue emphasis placed on the bloody nature of nipple discharge. The bleeding breast, however, must be suspected of harboring not only a papilloma or precancerous epithelial hyperplasis, but even an actual impalpable carcinoma. The entire breast should be removed in those cases of nipple bleeding wherein no localized focus is clinically demonstrable.

(2) Chronic cystic mastitis—Eighteen cases. The discharge was bloody in seven, serosanguineous in four, milky in three, greenish in three, and brownish in three. Ten of the 18 had intraductal papillary epithelial hyperplasia.

The conclusion seems warranted that in cases of nipple discharge associated with a nodular breast, particularly if the discharge contains blood, the majority of such breasts will show epithelial hyperplasia. There is accumulating an increasing volume of evidence to suggest that cystic disease with epithelial hyperplasia is precancerous.

(3) Duct papilloma—Seven cases. Two had a nonsanguinous discharge. Six simple mastectomies were done, but frequently the lesion can be removed by local excision. Adair has estimated that it requires ten to twelve years for these lesions to become malignant, and that a palpable mass always presents itself. However, this has been proven false, as there have been a number of cases in which malignancy transformation occurred with only nipple discharge being present.

(4) Discharge from hormonal dysfunction—Seven cases. None were operated upon. Three had milky discharge, three brownish or serosanguineous discharge, and one a mucous discharge. There were no masses, cysts or nodules.

(5) Inflammatory cysts—Three cases. All had a circumscribed mass in the central portion of the breast with discharge varying from bloody to milky.

(6) Fibrous mastitis—Two cases in which a breast was removed because of bloody discharge showed a pronounced increase in breast stroma accompanied by apparent atrophy of the epithelial elements. One patient was 33 and the other was 71.

Treatment: The group of patients in whom both tumor and discharge are present arouse no controversy. The presence of the mass is an indication for surgery. The troublesome and dangerous problem is the discharging breast which contains no mass. The author states that there are five groups of patients with nipple discharge and no tumor in which there are definite indications for surgery. They are:

(1) Nipple discharge with positive illumination. Here, local excision of the offending duct is indicated. However, block excision of a segment or mastectomy may be required, depending on the extent and distribution of the papillomatous lesions.

(2) Nipple discharge with positive pressure test. Here, excision of the duct should be undertaken.

(3) Nipple discharge with localized nodularity in the breast. A biopsy should be taken and if hyperplastic epithelium is found, a quadrant excision or simple mastectomy is in order.

(4) Nipple bleeding after menopause. In these cases the threat of cancer is so real, and the psychic and cosmetic arguments against mastectomy are so slight, that a simple mastectomy should be advised.

(5) Continued bleeding of undetermined origin (one month or more). The entire breast should be removed in all such cases.

COMMENT: This is a valuable contribution on a practical and important subject. In the main, one is very enthusiastic in his endorsement of the preparation of this paper and the conclusions, but there are certain features that need clarification.

It is entirely correct that a sanguineous discharge from the nipple should produce immediate suspicion and treatment. However, there seems to be less respect for nonsanguineous discharge than this condition deserves. A discharge from the nipple, whether it is bloody or not, usually indicates a certain degree of intraductal epithelial hyperplasia, ordinarily papillary in type, and more frequently than not the type of tissue in which a malignancy is subsequently superimposed. We have in this paper evidence of this importance of nonsanguineous discharge. There were 12 out of 22 carcinomas which had nonsanguineous discharge. Ten out of 18 chronic cystic mastitis patients had intraductal papillary epithelial hyperplasia. Two out of the seven duct papillomata had a nonsanguineous discharge.

It would therefore seem quite apparent that nonsanguineous discharge from the nipple must be looked upon with great suspicion as an associated symptom with intraductal hyperplasia.

In this article one finds it difficult to understand how the diagnosis of hormonal dysfunction was reached, particularly when three of these patients had a brownish or a serosanguineous discharge. None were operated upon, and one must maintain the suspicion of these patients as having actual intraductal changes which were not properly appreciated.

The author has likewise attempted to be more than fair in discussing the treatment of the discharging breasts with no mass. This is to be observed in the first two categories he considers. In the first, "nipple discharge with positive illumination," there arises considerable question as to whether a mass, capable of local excision, could be identified by illumination and could not be palpated. Similarly, excision of the duct only in patients with a positive pressure test is far more difficult of actual precise consummation than it would appear from this article and, while theoretically good, the principal is not a very practical one.

In substance this article is a splendid one which calls attention again to the tremendous importance of discharge from the nipple whether it be sanguineous or nonsanguineous in character.

Wendell Long.

"Sulfonamide Therapy As An Aid To Surgery." By John S. Lockwood, M.D., Philadelphia, Pennsylvania. Surgery Gynecology and Obstetrics, February 15, 1941, Volume 72, Number 2A, Page 307.

Bacteria obtain their food by altering the constituents of the body tissues to suit their own particular needs. They cannot make direct use of large unsplit molecules of protein. These molecules must first be broken down into the simpler amino acids or polypeptides through the action of enzymes. It is here that the sulfonamide compounds produce their effects. These compounds resemble certain chemical substances which are essential to bacterial nutrition, of which one, at least, appears to be p-aminobenzoic acid. The molecules of the sulfonamides are believed to cover up the points of molecular reactivity on the bacterial surface and thus prevent the coupling of p-aminobenzoic acid to the enzyme. If the molecules of sulfonamide greatly outnumber the molecules of p-aminobezoic acid, the bacteria cease to multiply and die.

P-aminobenzoic acid is probably only one of a group of substances which act as inhibitors of sulfonamide bacteriostasis. Sulfonamide inhibitors are also present in peptone and most enzymatic digests of protein. Pus and necrotic tissue contain large amounts of sulfonamide inhibitors.

In some lesions, such as erysipelas, the concentration of drug required to bring about death to all the streptococci is low, perhaps only 1 or 2 milligrams per cent. However, in lesions characterized by early necrosis such as staphococcic cellulitis, a concentration of 15 or 20 milligrams per cent may merely check the spread of the condition.

The amount of drug required for treating urinary tract infections is not great because sulfonamides are excreted by the kidneys in active form in high concentration in the urine.

The anatomical location of an infection, with particular respect to the capacity of the phagocytic defense in the area influences the curative effects of the sulfonamides. As for instance, the Clostridium welchii produces an infection in the peritoneum of a rabbit or mouse which can be controlled by the sulfonamides, whereas the same organism injected intramuscularly causes an infection which is unaffected by the drugs.

The amount of sulfonamide inhibitor in newly infected

tissue or in the blood stream and lymphatics is apparently not great, so that maximal bacteriostatic action of the drug is obtained. After localization and necrosis, sulfonamide inhibitors are released and the sulfonamide has little effect on the suppurative component of the infection. Here surgical drainage is of paramount importance.

COMMENT: The author presents here a hypothesis of the mechanism of the action of sulfonamide compounds which we feel conforms with most of the clincal and experimental data that we have. A careful study of Dr. Lockwood's article may help us to use the sulfonamides intelligently and effectively rather than in any hit or miss fashion.

Warren Poole.

"The Diagnosis and Treatment Of Acute Diseases of the Abdomen In Children." By M. Tischer Hoerner, M.D., F.A.C.S. The American Journal of Surgery, April 1941, Vol. LII, No. 1, Page 3.

"There are some acute surgical conditions frequently encountered in children which are rare in adults. Acute diseases common to both childhood and adult life may manifest themselves differently in the young and require different forms of treatment. In children, it is not unusual for pathological lesions situated in distant parts of the body first to produce referred symptoms in the abdomen. A different technic should be employed when examining young individuals. Success in diagnosis depends upon the ability of the physician to manage the patient.

There is no age limit for appendicitis. The disease in the young is notorious for the rapidity with which it progresses. Prompt diagnosis and removal of the organ before perforation occurs assures recovery. Even when rupture has taken place, eradication of the source of infection offers the best hope of a favorable outcome.

The causes of acute intestinal obstruction in children are not always the same as those found in older patients. Young individuals are unable to tolerate the shock, dehydration and toxemia which accompany the condition. The mortality is high unless immediate relief is obtained.

Intussusception is the most common surgical emergency encountered in infants under two years of age. Reduction constitutes the only safe method of treatment which assures a good chance of recovery. As this is possible only during the early stages of the disease, prompt diagnosis and immediate surgical intervention are necessary to save the child's life.

The urachal remnant and Meckel's diverticulum are uncommon sources of acute abdominal disease. Nevertheless, these structures, as well as abdominal tumors and lesions of the biliary system must be kept in mind when dealing with acute abdominal disease in children."

COMMENT: This is a good article and serves to remind us of the important differences between adults and children that must be constantly kept in mind by the surgeon.

LeRoy D. Long.

EYE, EAR, NOSE AND THROAT

Edited by Marvin D. Henley, M. D.
911 Medical Arts Building, Tulsa

"The Surgical Treatment of Syphilitic Optic Atrophy Due To Chiasmal Arachnoiditis." By Louis Hausman, M.D., New York. American Journal of Ophthalmology, February, 1941.

Already in 1937, the author described the symptoms of failing vision and primary optic atrophy due to syphilitic arachnoiditis of the optic chiasm and nerves. He has been suspecting the chiasmal lesion as the cause of certain syphilitic optic atrophies since 1932, but not until 1936 was he able to substantiate such a supposition by findings at operation. In that patient the optic chiasm and nerves were exposed and found to be enveloped by dense adhesions, which were freed by blunt dissections. Soon thereafter the vision of the patient began to return.

The present report includes follow-up notes on this patient observed over a period of two years, together with a report of two additional cases in which operation was performed for the same condition and likewise revealed adhesions around the optic chiasm.

The first patient was a Negress 26 years old. She complained of anosmia and progressive loss of vision. The left eye was blind, except for a small sector. In the right eye there was a temporal hemianopsia. The fundi showed bilateral primary optic atrophy. The Wassermann reaction of the blood was four plus. A craniotomy was performed, and the chiasmal adhesions released by blunt dissection. There was immediate improvement in vision. The improvement continued steadily so that two years after operation uncorrected visual acuity in the left eye was 16/15 and in the right eye 16/15-2. Color vision also returned in both eyes. The visual field also enlarged in both eyes. Simultaneously, the patient was put on antisyphilitic treatment (bismuth injections). Despite this marked improvement in vision, the bilateral primary optic atrophy has remained unchanged, and the discs are now as white as they were before the operation.

The second patient was a 44-year-old Negro. His complaint was pain in the abdomen and progressive loss of vision. The loss of vision in both eyes was of long standing. Vision was so bad that the patient needed a constant escort. In the left eye there was only light perception; in the right eye the visual acuity was 2/200. The color vision was impaired and the fields of vision were somewhat restricted. There was bilateral primary optic atrophy. A craniotomy was performed, and the region of the optic chiasm exposed. At the base of the skull near the optic chiasm were numerous bands and adhesions completely encircling both optic nerves and apparently compressing them. The adhesions were freed by blunt dissection. After the operation there was a slow improvement in visual function, and it was less marked than in the first case. Yet, this was to be expected in view of the long-standing history of visual impairment in both eyes. At present, the patient can move around without escort, and the gain in acuity has not regressed. This patient is interesting, also, because no conservative antisyphilitic treatment was able to arrest the gradual decline in vision, and the patient would have become blind inevitably without a surgical intervention.

The third patient was a 39-year-old white woman. Her progressive loss of vision was due to an unsuspected syphilis, which she acquired from her husband. The patient was blind in both eyes, for two years in the right eye and for nine months in the left eye. There was bilateral primary optic atrophy, and the patient could not recognize objects held close to her eyes, nor could she count fingers even at a short distance. The charting of visual fields showed general peripheral contraction. Neither of the pupils reacted to light. She was given antisyphilitic injections of bismuth and neoarsphenamine, but the injections did not help vision.

The craniotomy and the exposure of the chiasmal region showed a definite grayish, weblike structure binding down the optic nerve. It stretched across to the left side from the right side, and posteriorly enveloped the entire chiasm. When this adhesive process was freed, an excellent view was obtained of the chiasm and both optic nerves, which appeared to be normal. Immediately after the operation, the patient showed improvement in vision. Already on the first day she was able to count fingers; six days later she could identify small objects held at one and a half feet. Thirty-six days after the operation the visual acuity in the left eye was 2/200. And six and

a half months later she could read headlines of newspapers. The improvement in the right eye was much slower and to a lesser extent. The final improvement is still to be expected.

Cases manifesting the syndrome of syphilitic chiasmal arachnoiditis have hitherto been diagnosised as tabetic optic atrophy. Yet, one should know that adhesions may exist at the base of the brain in cases of syphilitic primary optic atrophy, with or without signs of tabes dorsalis in the spinal cord. This should be kept in mind, and, if adequate antisyphilitic treatment fails to arrest the progress of visual impairment in syphilitic optic atrophy so that blindness threatens, the patient should be acquainted with the prospects of a surgical intervention. When blindness is imminent, no reasonable therapeutic measure should be ignored.

"Recurrent Erosions of the Cornea." By Maxwell Thomas, M.D., Dallas, Texas. Southern Medical Journal, April 1941.

The recurrent erosion is a symptom of many corneal diseases. It is, as Fuchs defined it, a superficial excorination of the cornea which simply produces a loss of substance in the epithelial covering. Since such recurrent erosions tend to produce a definite complex of symptoms the author suggests that it should be called "the recurrent erosion syndrome," and each case should be classified according to the ascertained causes, when possible.

The condition has been discussed under various headings such as "herpes and allied lesions,"(Lloyd), or "neurotrophic keratitis," (Buffington). The German literature usually describes these erosions as "traumatic herpes of the cornea," while the older literature refers to it as "intermittent neuralgic vesicular keratitis," (Hansen), or "relapsing traumatic keratitis," (Deschweinitz).

The views of ophthalmologists differ greatly on the etiology of such recurrent erosions. Franceschetti ascribes the spontaneous type of erosions. Schappert was able to show the pedigree of such erosions in three generations of a particular family. Vogt suspected systemic disturbances as the cause of recurrent corneal erosions, while Spektor believed that it may be caused even by Ascaris or other intestinal worms. After the discovery of the herpes virus in 1912, more and more ophthalmologists mentioned the probability that these recurrent erosions are caused by some neurotropic virus. Then, when the medical world became acquainted with allergy, cases have been described as allegedly caused by contact with certain allergens, such as artifical silk. Certain pathological changes accompanying the corneal erosion suggested that there may be some etiological relationship between erosions and the epithelial dystrophies of the cornea.

It seems very probable that trauma of the cornea is the exciting cause, but the actual cause of the pathologic changes which follow is a herpetic infection (Ammann). Much more could be learned from pathological studies of the erosions, but such studies are rather few, and have been made on corneal scrapings. Biomicroscopy is a suitable method of pathological studies of corneal erosions.

Biomicroscopic observations show that in recurrent corneal erosions the first evidence of the disease is the presence of a swollen edematous area with only a faint haze to indicate the change. Eventually, the areas stain, depending upon the rupture of vesicles or the desquamation of epithelium. But hours or even days may elapse before any vesicle is formed in the hazy areas. The vesicles vary in size: there are very small ones, which are superficially located, and large ones between the elastic lamina and Bowman's membrane. The small vesicles rupture and heal before staining can reveal the existence of an erosion. The larger ones may persist for some time, but they will also rupture and heal quickly so that the unpleasant symptoms vanish rapidly. The healing by epithelization is so prompt that there is an illusion of rapid healing; yet, the new epithel can be easily removed, and a much larger corneal area will become denuded than before. The easy detachment of new epithelium is called "disjunction of epithelium," (Szily), and is thought to be due to some trophic disturbance.

The eroded area is always proximal to the site of injury or to the place of the cornea where a previous abnormal condition has existed. If the erosions are scattered and confined to the epithelium, the presence of a herpetic infection can be assumed with certainty.

The symptoms of the syndrome of corneal erosion are very typical. The patient usually tells that on awakening or opening the lids after a few moments' closure, he experiences a sharp pain in the eye, which radiates over the side of the head or remains in the eye proper. With the effort of opening the eye, tears flow freely. There is marked sensitiveness to light; the eye may be slightly reddened, and there is a foreign body sensation because the lids stick to the blebs or pull on the edematous corneal epithelium. In cases in which the pathologic changes are confined to the epithelium, the corneal sensitivity is lowered. At time of the rupture of the vesicles, there is hyperesthesia, which may cause headache.

The prognosis is good for erosions located in the epithelium, but, if the condition is neglected, and the parenchyma becomes affected, scarring will result. Scarring and subsequent visual disturbances will be the result if the endothelium is also damaged. Secondary infections will also unfavorably affect the prognosis. Among the four cases reported by the author there was one in which even the eyeball was lost from secondary infection.

One should attempt at finding the true cause of the erosion before instituting treatment. If focal infection is suspected to exist it should be eliminated. Locally, the use of bland oils in the conjunctival sac and a mild antiseptic to prevent secondary infection will suffice, after the unhealthy epithelium has been thoroughly removed. In traumatic cases, the use of a mild cauterant such as iodine upon the eroding areas will help to restore a normal adherence of the epithelium, and it may also help in destroying the herpes virus. Goar advocated a thorough curettement, followed by the application of iodine, and the author wholeheartedly recommends the same method. Others recommended the use of x-ray in preference to acid cauterants.

Among the four cases reported by the author one represents the spontaneous type of erosion with attacks which have come principally following prolonged use of the eyes and when the patient's general health has been under par. The erosions have always occupied areas of the cornea at the site of former erosions or next to them. The second case seen in a 25-year-old white man is a typical example of recurrent erosions of a relapsing keratitis of the herpetic type. The erosions were multiple and generally scattered, which suggested the herpes virus as the cause of recurrence. Animal inoculations were further proof of the herpetic infection. In the third case of traumatic recurrent erosion there was a deep corneal injury and, probably, neurotrophic changes. The patient recovered after a period of one and one half years. The fourth case seen in a woman, 43-years-old, is an example of neglected erosion with alleged trauma in one eye but no history of trauma in the other eye, indicating the probable existence of neurotrophic changes which allowed the entrance of the herpes virus in the more inflamed eye.

"The Retinal Manifestations of Subacute Bacterial Endocarditis." By Paul S. Hagen, B.S., M.B., Boston, Massachusetts. Minnesota Medicine, April, 1941.

Retinal hemorrhages are quite frequent in patients with bacterial subacute endocarditis. They appear and disappear at intervals, and there is probably no patient

suffering from subacute bacterial endocarditis who did not have at least one retinal hemorrhage in the course of the disease. The retinal bleedings in endocarditis were first observed in 1872 by Roth, who described them as signs of a "septic retinitis." Others observed elliptical hemorrhages with white centers at an early stage of bacterial endocarditis. But the retinal manifestations may include also embolism of retinal and choroid vessels, resulting in various ophthalmoscopic pictures.

Changes in the disks have been mentioned only by a few observers. The present study aims at determining the incidence of disk involvement in subacute bacterial endocarditis and the correlation of such lesions with other manifestations of the disease. The author examined, therefore, the case records of 67 patients hospitalized at the Division of Internal Medicine of the University of Minnesota Hospital. He found 37 cases in which the eye fundus had been examined. All cases were proved to be true cases of subacute endocarditis.

Thirteen cases or 35 per cent of the series showed disk lesions. The exact classification of these lesions would be extremely difficult. The possibilities are that they are due to toxemia, or embolic processes in the retinal or cerebral circulation, increased intracranial pressure, cerebral hemorrhage from mycotic aneurysms, or just a simple secondary anemia. The disk lesions were different: blurring, papilledema, indistinct margins, hemorrhages in the disk, optic neuritis, optic atrophy.

Petechiae are not always present in the cases showing disk lesions, but they are to be found in about 91.6 per cent of the cases. Patients without disk lesions showed petechiae in about 50 per cent. Cerebral embolic phenomena occured seven times in the entire series of 37 cases. Six of these were among the group with disk lesions. This means that disk lesion can be expected with considerable regularity in cases of subacute bacterial endocarditis showing evidence of cerebral emboli.

Variations in blood pressure, temperature, and leukocyte count failed to reveal signficant correlation with the occurrence of disk lesions. Visual disturbance is the one finding that seems definitely confined to the group of patients with disk lesions. In 1910, Falconer stated that the finding of optic neuritis will aid in making an early diagnosis of subacute bacterial endocarditis. It would be, therefore, interesting to determine the amount of time which elapsed between the onset of symptoms of the disease and the appearance of the disk lesions. The author stresses the importance of routine ophthalmoscopy in all cases of bacterial endocarditis.

"A Survey of Superficial Punctate Keratitis in Tasmania With the Record of a Mild Epidemic." By J. Bruce Hamilton, Hobart. The British Journal of Ophthalmology, January, 1941.

There are a number of little known corneal diseases described under such terms as: superficial punctate keratitis, dendritic ulcers, disciform keratitis, neuropathic keratitis, and keratitis profunda. All of them, together with the herpes simplex of the cornea, were supposed to be caused by herpetic virus infection. Yet, until a better understanding of virus diseases is obtained, one cannot say anything definitely as to the relation of these various corneal affections. An epidemic of superficial punctate keratitis observed by the author in Tasmania proves that a variety of corneal lesions due to one virus may occur.

Among these corneal lesions the least severe are the multiple corneal erosions. Doggart showed that they are very common after influenza, and also after Koch-Weeks conjunctivitis. The author, in cases of the Tasmanian epidemic, found that these erosions are the manifestations of the same virus disease which causes superficial punctate keratitis. Other more severe manifestations of this virus disease are marginal keratitis with or without ulceration, frank superficial keratitis, dendritic ulcer, and disciform keratitis, all of which could be found concurrently with superficial punctate keratitis.

Superficial punctate keratitis as an epidemic disease has already been described by Wright (1930), and others. The Tasmanian epidemic included 83 cases seen between February 1, 1931, and June 1, 1939. Before, and since then, many mild endemic cases were observed by the author. There now seems to be no doubt that it is a virus infection of the trigeminal nerve, and that it may sometimes be associated with herpes of the face.

Forty-two of the patients were males, and 50 were females, most of the male patients being in the third decade of life, and the female patients in the fifth and sixth decades. Influenza played the greatest etiological part, yet there was no definite seasonal incidence of the disease. The Tasmanian epidemic showed that there is no acquired immunity to this infection. Several patients had relapses in the same eye or in the other eye. The disease did not appear to be contagious.

The history of a recurrent red and watery eye, with photophobia and little discharge, and no deep seated pain, accompanied by a slight blurring of the vision, is most typical. The corneal lesion can be found with a monocular loupe only with difficulty, and many cases of superficial punctate keratitis will be missed unless continuous and careful observation be made. A corneal microscope should be used for differential diagnosis.

The author found that painting of the conjunctival surface of the lids with 2 per cent silver nitrate will have a dramatic result. By this method of treatment the average duration of treatment has been reduced to 7.3 days. If a final application of silver nitrate was made to the lids after all the corneal lesions had departed, and the eye looked satisfactorily white, relapses were diminished.

Kentgens considers that definite benefit is to be derived from treating herpetic conditions of the cornea (including superficial punctate keratitis) with vitamin A preparations, both locally and generally. The duration of illness could be reduced from 30 days to ten days, which is very significant, and deserves further exploration.

PLASTIC SURGERY

Edited by Georgs H. Kimball, M. D., F. A. C. S.
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"Prosthetic Reconstruction of Nose and Ear With A Latex Compound." By Arthur H. Bulbulian, D.D.S., Rochester, Minn. A.M.A. Journal, April 5, 1941.

The author has perfected a means of using latex compounds for artificial ear and nose. He states that plastic surgery for reconstruction is given the first consideration in restoring noses and ears with the following exceptions.

1. When the patient is of advanced age.

2. When the patient needs an immediate restoration in order to carry on his or her work after removal of a growth before reconstruction by surgical methods is advisable.

3. When the patient is unable financially to pay for hospitalization for a plastic surgical operation.

4. When operation is considered inadvisable because of the situation or extent of the defect.

The author works in conjunction with Dr. Gordon B. New, plastic surgeon of the Mayo Clinic

During the past five years he has developed this compound and shown satisfactory results.

Conclusions: From the report it appears that this is an advance in prosthetic material. There are cases, especially total loss of ear and total loss of nose, that are probably better treated by prothesis than by surgery. This is especially true in the aged.

CARDIOLOGY

Edited by F. Redding Hood, M. D.
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"Premonitory Symptoms of Acute Coronary Occlusion." By Arthur M. Master, M.D., Simon Dack, M.D., and Harry L. Jaffe, M.D. Ann. Int. Med. 14:1155-1165, January, 1941.

To know that an attack of coronary occlusion is imminent may not serve the highest purpose of preventing the development of complete closure, but it is satisfying to be able to recognize the prodrome. Premonitory symptoms were recognized in 44.2 per cent of 260 patients who subsequently had acute coronary occlusion when detailed histories could be carefully elicited, report Arthur M. Master, M.D., Simon Dack, M.D., and Harry L. Jaffe, M.D., of Mt. Sinai Hospital, New York.

Merely knowing that occlusion has begun will not prevent progress to complete obstruction, if such is to occur; but placing the patient in bed immediately following onset of symptoms may decrease the severity of cardiac agony and the incidence of fatal heart failure. Futhermore, physician, patient and relatives derive consolation from anticipating events.

Warning that coronary occlusion is about to occur, may be given by symptoms occuring from twenty-four hours to two or three weeks before actual closure takes place. The preliminary notice of a serious impending catastrophe varies from sudden typical anginal pain or increased frequency of attacks of angina pectoris, to substernal or precordial distress, fatigue, weakness, dyspnea, palpitation, nervousness, dizziness and gastric symptoms. Whether the symptoms are intermittent or continuous, lasting for a few minutes or several hours, there is usually a pain-free interval immediately before the onset of acute occlusion.

Initial symptoms came on during rest in 28.5 per cent of the cases, during mild or moderately actively in 68.5 per cent and during strenuous effort in only 2.9 per cent. The percentage of attacks which occur during rest, sleep, mild or routine activity, walking, moderate activity or strenuous exercise is proportional to the part of the day spent by the ordinary person in these activities.

The physical signs of occlusion are obviously lacking during the period before complete block of the coronary artery, with resultant infarction of the heart muscle, takes place. Fever, leukocytosis, tachycardia, fall in blood pressure and electrocardiographic changes are noted during the early phases of coronary occlusion. These signs are produced by infarction of the myocardium and are not evident until such an event occurs.

The fact that in over 40 per cent of the cases of coronary occlusion it was possible to observe threatening symptoms hours, days and even weeks before blood flow in the vessels was actually shut off and death of cardiac muscle resulted, suggests that closure develops gradually, probably in any one of the three ways:

1. Hemorrhage into the intima of an arteriosclerotic plaque, with secondary thrombosis within the lumen of the vessels as a result of injury or actual dissolution of the overlaying endothelium;
2. Primary thrombosis on an arteriosclerotic plaque;
3. Hemorrhage into an atheromatous abscess (hematoma) closing the lumen of the vessel with actual thrombosis.

On these hypotheses one may assume that the onset of the warning symptoms is associated with the rupture of a mural capillary, producing hemorrhage which suddenly narrows the lumen of the coronary artery, but does not entirely block it.

Coronary occusion then is the end result of an arteriosclerotic process.

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1. Knight, F., and Shelanski, H. A., "Treatment of Acute Anterior Urethritis with Silver Picrate," Am. J. Syph., Gon. & Ven. Dis., 23, 201 (March), 1939.

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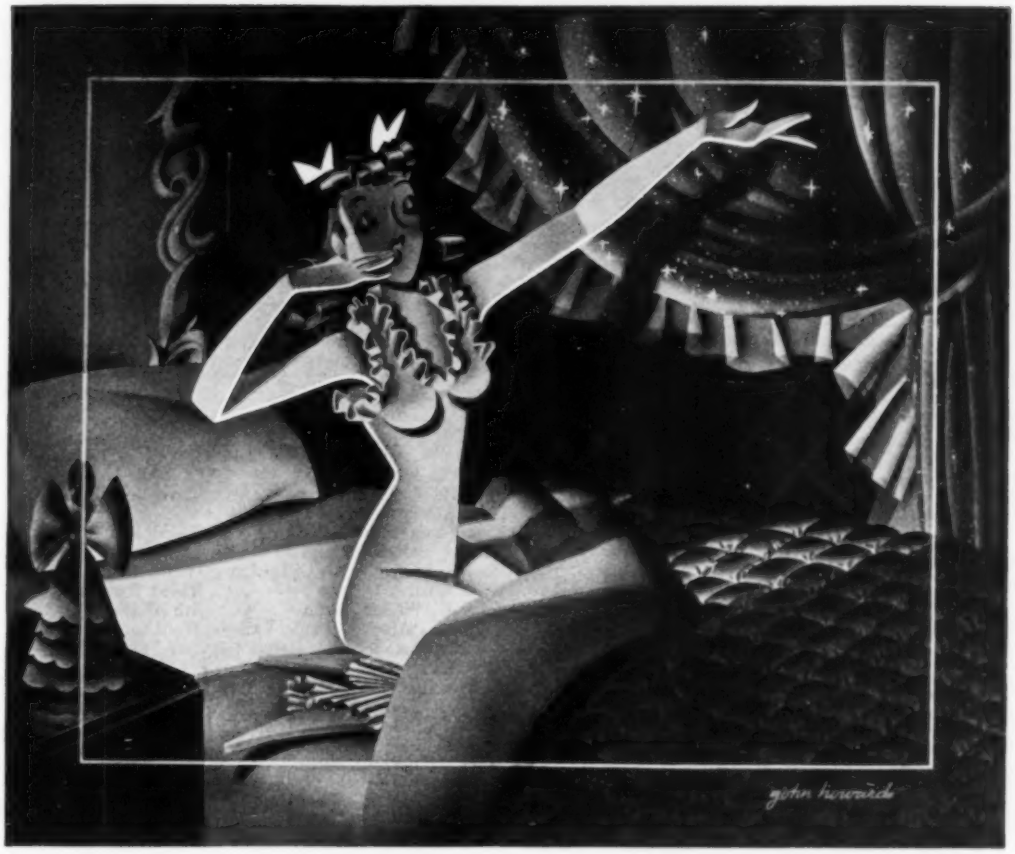

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Beckham	H. K. Speed, Sayre	T. W. Pratt, Cheyenne	Second Tues, eve.
Blaine	L. R. Kirby, Okeene	W. F. Griffin, Watonga	
Bryan	J. T. Colwick, Durant	W. K. Haynie, Durant	Second Tues, eve.
Caddo	E. W. Hawkins, Carnegie	G. E. Haslam, Anadarko	
Canadian	P. F. Herod, El Reno	A. L. Johnson, El Reno	Subject to call
Carter	R. C. Sullivan, Ardmore	H. A. Higgins, Ardmore	
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Comanche	G. G. Downing, Lawton	Donald Angus, Lawton	
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Craig	Powell L. Hays, Vinita	Paul G. Sanger, Vinita	
Creek	P. K. Lewis, Sapulpa	Wm. P. Longmire, Jr., Sapulpa	
Custer	C. Doler, Clinton	W. C. Tisdal, Clinton	Third Tuesday
Garfield	V. R. Hamble, Enid	John R. Walker, Enid	4th Thursday
Garvin	Robert M. Alexander, Paoli	John R. Callaway, Pauls Valley	Wed. before 3rd Thur.
Grady	Turner Bynum, Chickasha	Roy E. Emanuel, Chickasha	3rd Thursday
Grant	I. V. Hardy, Medford	E. E. Lawson, Medford	
Greer	J. B. Lansden, Granite	J. B. Hollis, Mangum	
Harmon	Samuel W. Hopkins, Hollis	Wm. M. Yeargan, Hollis	1st Wednesday
Haskell	Wm. S. Carson, Keota	N. K. Williams, McCurtain	
Hughes	William L. Taylor, Holdenville	Imogene Mayfield, Holdenville	First Friday
Jackson	Raymond H. Fox, Altus	Willard D. Holt, Altus	Last Monday
Jefferson	D. B. Collins, Waurika	J. I. Hollingsworth, Waurika	
Kay	J. G. Ghormley, Blackwell	L. I. Wright, Blackwell	3rd Thursday
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Kiowa	J. M. Bonham, Hobart	J. L. Adams, Hobart	
Le Flore	G. R. Booth, Le Flore	Rush L. Wright, Poteau	
Lincoln	J. W. Adams, Chandler	C. W. Robertson, Chandler	First Wednesday
Logan	Wm. C. Miller, Guthrie	J. L. LeHew, Jr., Guthrie	Last Tuesday evening
Marshall	John L. Holland, Madill	J. F. York, Madill	
Mayes	S. C. Rutherford, Locust Grove	E. H. Werling, Pryor	
McClain	B. W. Slover, Blanchard	R. L. Royster, Purcell	
McCurtain	R. D. Williams, Idabel	R. H. Sherrill, Broken Bow	4th Tues. eve.
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Murray	P. V. Annadown, Sulphur	O. D. Thomas, Sulphur	
Muskogee	A. N. Earnest, Muskogee	S. D. Neely, Muskogee	1st & 3rd Monday
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Okfuskee	J. M. Pemberton, Okemah	L. J. Spickard, Okemah	2nd Monday
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Ottawa	J. W. Craig, Miami	L. P. Hetherington, Miami	Last Thursday
Pawnee	M. L. Saddoris, Cleveland	Robert L. Browning, Pawnee	
Payne	A. B. Smith, Stillwater	Haskell Smith, Stillwater	3rd Thursday
Pittsburg	W. H. Kaeiser, McAlester	Edw. D. Greenberger, McAlester	3rd Friday
Pontotoc	E. M. Gullatt, Ada	R. E. Cowling, Ada	1st Wednesday
Pottawatomie	R. M. Anderson, Shawnee	Clinton Gallaher, Shawnee	1st & 3rd Saturday
Pushmataha	E. S. Patterson, Antlers	D. W. Connally, Antlers	
Rogers	W. A. Howard, Chelsea	P. S. Anderson, Claremore	1st Monday
Seminole	Claude S. Chambers, Seminole	Mack I. Shanholtz, Wewoka	
Stephens	E. C. Lindley, Duncan	John K. Coker, Duncan	
Texas	L. G. Blackmer, Hooker	Johnny A. Blue, Guymon	Subject to call
Tillman	T. F. Spurgeon, Frederick	O. G. Bacon, Frederick	
Tulsa	J. C. Brogden, Tulsa	Roy L. Smith, Tulsa	2nd & 4th Mon. Eve.
Wagoner	H. K. Riddle, Coweta	S. R. Bates, Wagoner	
Washington-Nowata	S. A. Lang, Nowata	J. V. Athey, Bartlesville	2nd Wednesday
Washita	A. S. Neal, Cordell	James F. McMurry, Sentinel	
Woods	C. A. Royer, Alva	O. E. Templin, Alva	Last Wednesday
Woodward	Joe L. Duer, Woodward	C. W. Tedrowe, Woodward	